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SUBSCRIBERS' BENEFITS.

The large number of positions that have been secured by applicants for the positions gratuitously advertised in our column of special notices is a gratifying demonstration of the benefit it has been to our subscribers in the profession. It has indeed become a very useful and eagerly looked for column in the JOURNAL, and though it involves some labor and expense to maintain, yet as a further consideration and advantage to our subscribers, we gladly incur them, and shall endeavor to make this the place to which all owners of mines and works and all professional men will go to find assistants or positions, as the case may be.

It is, of course, impossible to please all, and we have even heard of some who complain that we limit the benefit of this expenditure on our part to subscribers.

Those who complain are, of course, not subscribers, and, so far as we know, have never expended a dime in support of the JOURNAL. They may, perhaps, also consider it a grievance or injustice that we send the JOURNAL only to subscribers, and do not distribute it gratuitously to all who ask for it. This would be quite as reasonable. The JOURNAL obtains no return for the labor and expenditure it makes in collecting and publishing gratuitously this list of positions open, except the increase in its subscription-list which comes from making it more valuable to its subscribers.

It is our aim to add to this value until all who see the JOURNAL ask to be "put upon our list," in order to share in these advantages.

GEOGRAPHICAL NAMES.

A good deal of fun has been poked at Mr. FREDERICK SCHWATKA, late lieutenant of cavalry in the United States Army, and now leader of the New York *Times* exploring expedition to Alaska, because he has named a river on the Alaskan coast after Mr. JONES, the proprietor of the *Times*. The joke appears to be in the allegation that the river is well known, and has figured on various maps already, under another name. Whether this be so or not, the matter raises a more important question, namely, that of the propriety, feasibility, and policy of giving the names of private persons to natural objects.

Visitors to the big Tree Groves of the Pacific coast have a fashion of naming such of the giant trees as are not already appropriated; and the guides are said to humor this fancy by affixing wooden tablets to the trees so named—which tablets, after the departure of the tourists, are removed and planed off, so as to be ready for the next christening. Thus there are always some trees left without names to accommodate the latest comer. In like manner, the books of the Yosemite hotel are ful of entries, somewhat after this style: "I hereby name the third peak to the left of Glacier Peak, *Perkins Peak*, in honor of my esteemed pastor, Rev. THEOPHILUS PERKINS, of Perkinsville, Ind." But these names don't stick to summits any better than to trunks.

The fact is, either the inhabitants of a country, or those who make the authoritative and current maps of it, must adopt a name, if the conferral of it is to be any thing more than a foolish farce. Local usage is generally regarded as controlling. When a river or mountain has no local name, or the local name is a savage and unpronounceable one, it is permissible to substitute another; but this privilege should be exercised with discretion, particularly when the traveler who thus indulges his tact is not the first civilized explorer of the region. Under any circumstances, the plastering all over a map of the names of personal friends, or of eminent men whose fame is not connected with the region, is little better than the stenciling of patent medicine advertisements upon the rocks.

Lieutenant SCHWATKA has been guilty of a good many small sins of this description. The Jones River, if it be a new discovery, is well enough named. The patron of an expedition fairly deserves to be thus honored upon suitable opportunity. But SCHWATKA'S exploration of the Upper Yukon furnishes instances of a less excusable kind. In that case, he was in British territory, and on ground that had been previously visited, though never so accurately mapped, by other travelers. It was scarcely to be expected that his names would be accepted by the British authorities, still less by the natives, who will probably never hear of them. Yet he went into this business of geographical compliment with a rush. According to his published popular book, he immortalized in this way the following surprising series of persons, mostly still living to be duly grateful: Professor NOURSE, U.S.N.; Professor BAIRD, Smithsonian Institution; Professor DE SAUSSURE, Geneva, Switzerland; Colonel PERRIER, French Geographical Society; Dr. LINDEMAN, Bremen Geographical Society; Lieutenant PAYER, of the Austro-Hungarian Expedition; Mr. HOMAN, a private of the United States Engineer Battalion, topographer of SCHWATKA'S expedition; Mr. J. G. BENNETT, of the New York *Herald*; M. PREJEVALSKY, a Russian traveler; General FRANK WHEATON, U.S.A.; Vice-Admiral RICHARDS, R.N.; Professor WATSON, of Harvard; Sir GEORGE NARES; Lieutenant BOVE, of the Italian Navy; JUSTUS PERTHES, of Gotha, Germany; Prof. O. C. MARSH, of Yale College; Vice-Admiral MCCLINTOCK, R.N.; Prof. P. S. MICHIE, of West Point; Baron RICHTHOFEN, of Leipzig; General HANCOCK, U.S.A.; M. ANTOINE D'ABBADIE, a French explorer; VON SEMENOW, President of the Russian Geographical Society; Professor NEWBERRY, of Columbia College; M. CHARLES MANNOIR, of the Paris Geographical Society; Prof. ERNST HAECKEL, of Jena; Chief-Justice DALY, of New York; Baron VON NORDENSKJÖLD, of Sweden; FRANCIS P. PARKMAN, the historian; Dr. HENRY R. RINK, of Christiania; Count VON WILCZEK, of Vienna; General CHARLES G. LORING, of the Boston Museum of the Fine Arts; Colonel

INGERSOLL; Professor SELWYN, of Canada; M. ALEXANDER DE LA ROQUETTE, of the Paris Geographical Society; Prof. FREDERICK RATZEL, of Munich.

We have taken these names in the order in which they appear in the book. They are applied to mountains, rocks, bluffs, rivers (Richthofen River, the author says, he did not see; but he named it, all the same), lakes, islands, passes, and "points." All of them are respectable names; but few of them are in any way connected with the Upper Yukon or its exploration; and it is not likely that Lieutenant SCHWATKA'S personal preferences, thus expressed, will find a permanent place in geographical science. He has overdone the business; and if Jones River is the beginning of another such series of complimentary nomenclature, college professors and army and navy officers and *savants* generally, may well tremble.

THE BASIC DEPHOSPHORIZING PATENTS.

The enormous development of our steel industry through the substitution of steel for iron in many structural uses, in nails, in bolts and bars, in sheets and plates, in castings, and, in fact, in nearly every use to which iron was formerly applied, has made this the great steel-producing country of the globe. Steel manufacturing is extremely profitable at present, and it is not surprising that new works should be projected in almost every iron-producing district in the country.

In the South, steel-works are talked of and are actually building at many points. The Roane Iron-Works, near Chattanooga, is putting in a large Bessemer plant. The De Bardeleben Coal and Iron Company, near Birmingham, Ala., is about to make Bessemer iron with Georgia ores, which, it is said, are in quantity and are remarkably free from phosphorus. At least two basic plants are projected for the Birmingham District, and the vexed question, whether the Reese, the Thomas, or the Henderson process is to be triumphant must soon be settled. It would appear probable, from data already published in these pages, that no one can hold the basic lining invention, patented thirty years ago in France; but there are modifications and improvements in the application of the invention that REESE, or THOMAS, or HENDERSON may hold, and which may be necessary or important for a manufacturer to have the use of.

Should REESE obtain patents on all he claims—which, considering the extent of his claims is extremely improbable—the Bessemer Association still pretends to hold all REESE has invented or may invent in this field, so that there is a fine prospect for the lawyers to reap a harvest, whatever those who may introduce these patents come to. It is possible that the Bessemer Association, if successful against REESE, might practically "lock up" these patents and such of THOMAS'S as they own, as was, indeed, the scarcely concealed intention when they were purchased. If, on the other hand, REESE should obtain patents and show that they do not belong to or can be controlled by the Bessemer Association, it will still probably be a question to "fight over" whether they will enable a manufacturer to dispense with the purchase of improvements claimed by THOMAS, and which the Bessemer Association does not own. It appears probable that HENDERSON, without insisting on claims that are common to all the inventors and that appear to antedate any of the patents in dispute, may yet be able to make steel by dephosphorization with less interference than either REESE or THOMAS, and may, in fact, take the bone while the rest are fighting over the shadow.

Mr. REESE has, we understand, contracted to sell, or has sold, the exclusive right for the State of Alabama, to his inventions, so that, should his claims be established, the use of his invention may be limited to the works of one company.

From whichever side we regard it, the entire question of the basic and dephosphorizing patents is in an extremely unsatisfactory condition, and this may interfere somewhat with the growth of the steel-making industry where it is proposed to use phosphorus pig-iron, unless, indeed, HENDERSON'S process be put in practical operation.

It is to be hoped that REESE, THOMAS, and the Bessemer Association will quickly bring their quarrels to a final issue, and thus let manufacturers know exactly where they stand and with whom they have to deal; but considering the original policy of the Association, it is scarcely to be expected that any anxiety will be shown on that side to settle the question.

An Alaska Volcano.—A letter published in the San Francisco *Bulletin*, under date of Rodiak, Alaska, September 16th, says: "A volcanic peak of Pabloff Mountain, 300 miles southwest, on the Alaska peninsula, is in eruption. Slight falls of volcanic dust resembling emery powder were found. Captain Curry, of the schooner Rodiak, reports that on August 12th, when 100 miles from the volcano, his vessel was enveloped in a black cloud. The darkness was so great that lamps were kept burning from ten A.M to two P.M. At the same time, black dirt fell on the deck to a depth of several inches. Captain Abbey, of the United States steamer Corwin, who arrived here August 21st, also brought samples of the dust, and reported having heard a noise like thunder while passing through the volcanic region. No earthquake shocks have been reported thus far in connection with the outbreak.

OFFICIAL STATEMENTS AND REPORTS.

Sierra Grande Mining Company.

The Sierra Grande Mining Company has issued the following official statement:

PHILADELPHIA, Sept. 29, 1886.

TO THE STOCKHOLDERS OF THE SIERRA GRANDE MINING COMPANY:

GENTLEMEN: The directors of your company for the past year have felt a heavy weight of responsibility to rest upon them. The mines had practically been closed to await the decision of reduction of ores; this having been decided upon, the mill was to be built under contract, as reported last year; this occupied more time than we expected, and in place of starting January 1st, 1886, as per contract, it was not ready until February 1st. The trial run of ten days was finished and the acceptance declined, on the ground that the elevators, conveyors, etc., were not in working order to handle the amount of ore. This the Colorado Iron-Works agree to perfect, and on the trial run for quantity it handled 83 tons in 22 hours, and was accepted, subject to conditions of contract of which Article xii. says: "The party of second part guarantees that all machinery and appliances placed by it, and sold under this contract to the party of the first part, shall be first-class as to material and workmanship in every respect, and that the plant shall comply with the specifications and descriptions in every way. The party of the second part further agrees to remedy any defects in the machinery, or in placing the same, which may have appeared before the final payment is made to it, namely, 'which may have appeared within thirty days after completion of the plant, and to place every thing in first-class working order.'" This has not yet been complied with, and the final payment and settlement has not been adjusted.

The process, as such, has been a success, the ores yielding to treatment, and returning from 70 to 78 per cent of the assay value as taken from the tubs before leaching and money received from smelters: this was treating your ore at a 20 mesh fine.

The mechanical part of the mill has not come up to the expectations of the directors.

The principal defect is in the rolls, where capacity can not be attained as at present constructed. We also believe that finer crushing is most desirable, namely, that whereas two furnaces will chlorinate 100 tons of 40-mesh ore to 90 per cent or over in twenty-four hours, they will not chlorinate over 30 to 40 tons of 20 mesh to 75 per cent.

The grade of ore on the dumps did not come up to representations in quantity or quality, which, with smallness of capacity of mill, has caused a loss. One hundred tons in twenty-four hours could have been treated with comparatively the same cost as 30 tons, barring chemicals (about $2 per ton) on the excess over the 30 tons, so that you can easily see that with 100 tons per day there would have been a handsome profit.

Now, though the present trial has proved a failure, it should not be abandoned. The chemical part of the process (the most important) is all right. The mechanical defects can be remedied at a cost supposed to be $6000, which we hope our succes-ors will be able to do, and return to the stockholders some of their long-delayed dividends. But little has been done on the mines since February, 1885. There is, however, ore in sight on every side, but of low grade, which if followed is likely to lead to rich bodies as they did previous to spring of 1884, at which time this property was looking as dark as at present.

Financially, the company is not in as good condition to transfer to our successors as we would like; but your assets are large, and we hope that the future may soon look more encouraging.

The Sierra Bella Mining Company having at its last annual meeting decided to sell to the Sierra Grande, and the Sierra Grande having contracted to buy the Sierra Bella, the transfers have all been made according to stipulations then agreed upon. Yours truly,

JOHN B. MELLOR, President.

CASH SIERRA GRANDE MINING COMPANY.

			August 10, 1886.
August 11, 1885.	Balance cash on hand	$74,922.56	
" 10, 1886.	Bella Mining Company	22,935.16	
	Interest on bank deposits	782.59	
	Bullion on account of sulphides	1,500.00	
	Bills payable—Received for judgment notes	10,000.00	
	Loan account	7,500.00	
	CR.		
	Colorado Iron-Works, paid them		$30,000.00
	F. M. Endlich, G. M., remitted him		51,100.00
	W. C. Hadley, G. M., " "		17,000.00
	Mill chemicals		2,554.84
	Loan account		8,500.00
	Expenses		5,459.28
	Bella Mining Company		24.25
	Apache Mining Company		13 75
	Balance		2,988.19
		$117,640.31	$117,640.31
August 10, 1886.	Balance cash on hand	$2,988.19	

JOSEPH P. BROSIUS, Treasurer.

PHILADELPHIA, Sept. 30, 1886.

CIRCULAR OF INFORMATION TO STOCKHOLDERS OF THE SIERRA GRANDE MINING COMPANY OF NEW MEXICO.

On September 15th, 1886, the following notice was sent to all the large stockholders within reach:

"DEAR SIR: You are most earnestly requested to meet the Board of Directors of the Sierra Grande Mining Company, at their office, No. 119 South Fourth street, on Friday, 17th inst., at eleven A.M., to consult in regard to the present crisis of the company. Do not fail to attend.

"Respectfully, JOHN B. MELLOR, President."

In pursuance of the above notice, a considerable number of stockholders met. The president of the Grande Company stated:

"That we were in debt; that the mill was running at a loss; that several thousand dollars wages were due and must be paid; that $10,000 in

judgments had been entered up against the property; and that immediate action was necessary."

The president further suggested:

"That $20,000 more be advanced on judgment notes, in which event he thought the holders of the notes now in existence would consent to the new notes standing on the same footing as the old, making the amount of indebtedness of the company on judgments $30,000."

As the stockholders did not respond to this appeal, and as the stock could not be assessed, as was proposed by several stockholders present, the alternate plan as herein inclosed was presented and finally approved. The meeting adjourned, and again met September 24th, when the approved plan was again considered and *adopted*.

The trustees appointed, desiring to protect all, most earnestly request *every* stockholder to join in this endeavor to save his investments, they believing that in the event of a sale of the property, it had better be purchased, if possible, by a friendly syndicate composed of the stockholders, and the company reorganized on a sound basis. It is hoped and believed that a large number if not *all* of the stockholders will join in this effort, and will *at once* respond by the necessary deposit of their stock and the payment of the small contribution required. Immediate action is necessary, as the trustees must be informed at once, so that they may act shares promptly.

Holders of over 80,000 shares have already assented to the proposition. The trustees do not feel warranted in proceeding until at least 200,000 have assented.

A negotiable receipt will be given on the deposit of the shares and payment of contribution.

The inclosed plan was further approved at the regular stockholders' meeting, September 29th, 1886, and Messrs. Perot and Smyth and Buzby having consented to act as trustees for the subscribing stockholders, their appointment was duly ratified.

Please reply *at once*, and if you desire to go in this pool, either call in person, or sign agreement and send with certificates and check by registered letter to

FRANCIS BACON,
Secretary of the Meetings of Stockholders, and Secretary for the Trustees, 119 South Fourth Street, Philadelphia.

ON THE NEW ARTIFICIAL RUBIES.*

By George F. Kunz.

The subject I take the liberty of presenting this evening is of considerable interest at present, both financially and as a notable example of the manner in which the microscope is constantly called into use in almost every profession. Early in the past summer, the Syndicat des Diamants et des Pierres Précieuses, of Paris, was informed that certain stones that had been sold as rubies from a new locality were suspected to be of artificial origin. Geneva houses, it was said, had put them upon the market, and it was surmised that they were obtained by the fusion of large numbers of small rubies worth a few dollars a carat into one fine gem worth from $1000 to $2500 a carat.

Samples of these artificial stones were kindly procured for me by Messrs. Tiffany & Co.; but I was not permitted to break them for the purpose of analysis, to observe the cleavage, or to have them cut so that I might observe the optical axes more correctly. I should at any time have detected these stones at the first glance with a pocket lens, the whole structure being that of a fused or artificial production. Examination elicited the following facts:

The principal distinguishing characteristic is the presence of large numbers of *spherical bubbles*, rarely pear-shaped, or having stringy portions showing how the bubbles had moved. The ends of these bubbles are always rounded like those present in glass or fused mixtures. Viewed *en masse*, the bubbles have a cloudy appearance or are arranged in wavy groups; individually, they seem to be filled with air or gas, and form part of a cloud, the rest having the waviness of a fused mixture. A few appeared to inclose inner bubbles.

In natural rubies, the cavities are always angular or crystalline in outline, and are usually filled with some liquid. Sometimes they are arranged with the lines of growth, forming part of a *feather*, as it is called by the jewelers. Hence the difference between these natural cavities and those caused by fusion is easily marked even with the pocket lens. I have failed to find in any of these artificial stones even a trace of any thing like a crystalline or angular cavity.

Another distinguishing characteristic is, that in many genuine rubies we find a silky structure (called *silk* by jewelers), which, if examined under a microscope or under a $\frac{4}{10}$ or $\frac{8}{10}$-inch objective, is found to be a series of cuneiform or acicular crystals, usually iridescent, and arranged parallel with the hexagonal layers of the crystal. When sufficiently numerous, they produce the asteria or star effect, if cut in *cabochon* form with the center of the hexagonal prism on the top of the cabochon. I have failed to find any trace of these included *cuneiform* or *acicular* crystals in any of the artificial stones, or even any of the marking of the hexagonal crystal that can often be observed when a gem is held in favorable light so that the light strikes obliquely across the hexagonal structure.

Dr. Isaac Lea† has suggested that these acicular crystals are rutile, and my own observation lends strong confirmation to his view. (*See* paper on Star Garnets, New York Academy of Sciences, May, 1886.) It is my conviction that they were deposited from a solution, either hot or cold, while the corundum was crystallizing, and I doubt whether they will ever be found in any substance formed from fusion. The hardness of these stones I ascertained to be about the same as that of the true ruby, 8·8, or a trifle less than 9, the only difference being that the artificial stones are slightly more brittle. The testing-point used was a Siamese-green sapphire, and the scratch made by it was a little broader but no deeper than that made on the true ruby. As is usually the case with a brittle material, after several trials I faintly scratched it with chrysoberyl, which will also slightly mark the true ruby.

The specific gravity I found to be 3·93 and 3·95, that of the true ruby varying from 3·98 to 4·01. The difference between the false and true in this respect is, therefore, very small, and is doubtless due to the presence of the included bubbles. As a practical test of genuineness, this method is too delicate for jewelers' use, because, if a true ruby were not perfectly clean, or a few of the bubbles that sometimes settle on gems in taking the specific gravity were not removed, it would appear to have about the same specific gravity as these artificial stones. On examination with the dichroscope, I found that the ordinary image is cardinal red; the extraordinary, a yellowish salmon red, like the true ruby of the same color. Under the polariscope, I noted the appearance of what I believe to be annular rings, although I was unable positively to prove their presence, owing to the shape of the stones. Under the spectroscope, the red ruby line is visible, as in the true ruby. The color of all the stones I examined was good, but none was so brilliant as a very fine ruby. The cabochons were all duller than fine true stones, though better than poor ones, and had a remarkable uniformity of color, showing that they were made by one exact process or at one time. The cloudy appearance in all of them is doubtless due in part to the presence of bubbles. The optical properties of these stones are such as to make it evident that they are individuals or parts of individual crystals, and not agglomerations of crystals or groups fused by heating.

The matter was referred by the Syndicate to M. Friedel, of the Ecole des Mines, Paris, who was furnished with samples of the stones for analysis. He reported finding the same round or pear-shaped bubbles, and determined the hardness and specific gravity to be about the same as of the true ruby. On analysis, he found them to consist of alumina, with a trace of chromium for the coloring matter. The cleavage was not in all cases distinct. The rough pieces given to him as samples of the stones in their native state had all been worked, so that nothing could be learned of their crystalline condition. When properly cut according to axes, they showed the annular rings. The extinction by parallel light was not always perfect, which he ascribed to the presence of the bubbles. He states that he himself has formed small red globules with these inclusions by fusing alumina by oxyhydrogen light; and although he has no positive evidence, he believes these stones to be artificially formed by fusion.

On the receipt of M. Friedel's report, the Syndicate decided that all cabochon or cut stones of this kind shall be sold as *artificial* and not precious gems. Unless so marked, all sales of these stones will be considered *fraudulent*, and are punishable under the penal code. It was also determined that all sales so far made, amounting to between 600,000 and 800,000 francs, should be canceled, and the money and stones returned to their respective owners.

In my opinion, these artificial stones were produced by some process similar to that described by MM. Fremy and Feil (*Comptes Rendus*, footnote, 1877, t. lxxxv., p. 1029), by fusing an aluminate of lead with silica in a siliceous crucible, the silica uniting with the lead to form a lead glass, and liberating the alumina, which crystallizes out in the form of corundum in hexagonal plates, with a specific gravity of 4·0 to 4·1 and the hardness of the ruby. The color of the ruby is produced by the addition of chromium salt. By this method rubies were formed that, like the true stone, were temporarily decolorized by heating. It is not likely that they were formed by Gaudin's method (*Comptes Rendus*, t. lxix., p. 1342), by exposing amorphous alumina to the flame of the oxyhydrogen blow-pipe, thus fusing it to a limpid fluid, which, when cooled, is said to have the hardness of the true ruby, but a specific gravity of only 3·45. Nor is it more probable that they were obtained by fusing small natural rubies or pieces of corundum, because by this method the specific gravity is lowered to that of the product of Gaudin. The same holds good of quartz or beryl.

The action taken by the Syndicate has fully decided the position that this production will take among gem dealers, and there is little reason to fear that the true ruby will ever lose the place it has occupied for so many centuries. This only shows, however, another of the triumphs of the modern science of chemistry. Although some may be willing to have the easily attainable, there are others who will want, what the true is almost becoming to-day, the unattainable. The one is nature's gem, and the other that made by man.

Metallic Ore in Transit.—A special to the *World*, dated October 6th, says that, in a few days, Acting Secretary Fairchild will render a decision involving a question of great importance to the iron and steel trade throughout the country. In the transportation of metallic ores in vessels, it becomes more or less saturated with water, increasing its weight about 33 per cent. Manufacturers object to paying the duty that has been collected on the water absorbed in transit, and claim that they should only pay for the ore at its weight when dry. Solicitor-General Jenks decided it was not a law point, and a decision must be rendered according to the customs of trade. Naylor & Co., of New York, have made a test case, which will be decided by the Treasury Department.

Lead-Eating Insects.—A French architectural journal recalls an observation made by Viollet-le-Duc, that lead plates for roofing and other purposes are often pierced by insects. He accused the wasps of being the authors of the little holes that he found gnawed in lead roofs, but later observers have discovered that both worms and flies often drill through heavy plates. Some twenty-five years ago, it was found that the lead bullets of cartridges that had been stored in wooden boxes were badly gnawed, and a number of gall or saw-flies were found in the act of working upon them. Why these little creatures should amuse themselves in digging out the tough metal with their jaws, it is hard to say. Both males and females were found at work; and the only suggestion which our Gallic contemporary can make is, that they were, perhaps, sharpening their teeth. The first notice of perforations made by worms seems to have been made by M. Janniard, formerly official architect in charge of churches and public buildings, who observed that the lead covering of the steps on the roof of an old house in Paris was bored through in several places. Only one of the steps was attacked; and, on looking closely, he found that every hole in the lead corresponded to a worm-hole in the oak planking on which it was laid.

* Read before the New York Academy of Sciences, October 4th, 1886.

† See Proceedings of the Philadelphia Academy of Sciences, February 16th, 1869, and May, 1876.

THE LAKE OF TITICACA, SOUTH AMERICA.

Written for the Engineering and Mining Journal by Frederick G. Corning, M.E.

A journal of South American travel would hardly be complete without a chapter on the famous Lake of Titicaca, which is spread out over widely extended table-lands, at a great elevation, in the heart of the Andes.

At this latitude, the boundary line between Bolivia and Peru, the Andes are divided into the Eastern and the Western Cordillera, between which ranges the great plateaux are expanded to the enormous width of about two hundred miles. This depression, hanging gracefully between the two cordilleras, has an oval shape, and with an average width of one hundred miles, its area is about 15,000 square miles, forming one of the most remarkable terrestrial basins in the world. It appears to be of volcanic origin; blocks of lava are scattered along the shores of the lake, while igneous rocks are noticeable traversing the sedimentary strata.

The marvelous picturesqueness of the region, together with the signs of cultivation, furrowed plains, terraced hill-sides, and the numerous ancient relics of an historic civilization that are met with around the lake, upon arrival at Puno on its western shore, are refreshing in contrast with the dreary railroad journey of over two hundred miles from Arequipa, Peru, through a desolate, silent, barren, ashy waste, where the tired traveler pants for breath in chilly altitudes, rising from 8000 to 15,000 feet above the Pacific Ocean, in full view of the gray volcanic domes of Misti, Urvinas, and Chichani.

Titicaca is an Aymará word, and by some historians is translated cat-

LAKE TITICACA AND THE SORATA.

rock; according to other writers, *Titi* signifies lead, and *caca* a chain of mountains. The exact elevation of the lake above the Pacific Ocean is given at 12,516 feet, according to railroad surveys made from Mollendo, on the coast, to Puno. With an area approximated at 2500 geographical square miles, it is about 100 miles long, and averages 25 miles in width.

During the rainy season, from December to April, the lake rises about five feet; and during the dry season, when it sinks to the lowest level, the principal influx of water comes from the ranges of perpetual snow on the eastern shore. Of more than twenty different streams that flow into the basin, the main feeders are the Azangaro, the Maravillas, and the Ramis—the latter rising near the source of a tributary to the Ucayali.

The Titicaca is partially drained by the Rio Desaguadero, which is the only known outlet; and after pursuing a southerly course for, more or less, seventy-five leagues, the river spreads over the marshy flats of Pampas Aullagas, where the waters disappear through absorption and evaporation, there being no flow either toward the Atlantic or the Pacific Ocean. The Indians believe the lake to be in subterranean connection, under the cordillera, with the Pacific Ocean, because of the finding on the coast near Cobija of a certain kind of lake-rush peculiar to Titicaca, differing essentially from salt-water weeds.

Although the basin is gradually filling up from the masses of soil and sediment, which are washed down its steep, barren banks, void of vegetation, tending to raise the water-line, nevertheless the surface of the lake is slowly but surely sinking. The meteorological conditions are such that the evaporation during the dry season and the precipitation throughout the rainy months are no longer equipoised, and the area of the lake is, in consequence, steadily shrinking. As far back as three centuries, the sparkling waters of Titicaca dashed against the ancient monuments of Tiahuánaco, standing to-day twelve miles away from the shore, and at an elevation of 130 feet above the surface of the water. But still it is by far the largest lake in South America, being about half the size of Lake Ontario, and the largest on the globe at so great an altitude.

The scenery is not of that miniature type characteristic, for example, of the Kœnig's See in Europe or of the Red Fish Lakes in Idaho; but the attractions of Titicaca consist in its vast expanse and magnificent Andean scale of nature's productions, combined with the poetry of prehistoric art. Looking across its crystal-clear waters over into Bolivia to the east, the snow-capped mountains of the Cordillera Real are seen rolling across the horizon like a succession of foamy waves—the loftiest mountains on the American continent. Here rise in majestic splendor the Nevado de Sorata and the Illimani, two groups of serrated snow peaks, fringed with glaciers, towering up to hights closely approaching 22,000 feet.

A scattering of beautiful islands is among the charms of this interesting sheet of fresh water. Of these, the island of Titicaca is full of historic associations and the home of many an Indian tradition. The narrow, winding passages formed by the islands and the main-land, where the blue water is deep and transparent, together with the monolithic monuments and ruins sprinkled over this classic soil of the Incas, lend a fairy-like fascination to the scene.

The shores are dotted with the dingy, dusty huts of the Aymarás, whose past history is far more interesting than their present. Attired in somber garb, with a silent, sullen disposition, reflecting nature's condition at this altitude and latitude, this strange tribe move about as if mourning their deterioration and fall from ancestral glories. They are indolent and poor: their occupation consisting in the cultivation of rice, potatoes, and barley. Along the shores of the shoaly coves, the Indians gather the lake-rush, which they suck the juice from or make into salad. This rush, which grows about seven feet high, in places so thick as to appear like a meadow, is known as *totora*. In this bleak, mountainous region, where timber is unknown, its stalk takes the place of iron, wood, and canvas. Besides being used to make boats (*balsas*), mats, sails, houses, and beds, this bayonet-shaped rush, it is said, was formerly woven into bridges by the Incas and Aymarás, over which whole armies were passed. But now the Aymarás spend their time chiefly in attending the numerous feasts and religious exercises, a national characteristic, amid the jingling of church-bells from dilapidated cathedral towers and the wild din of Indian music. The dances on these occasions are unique in their grotesqueness. To witness the droll reels at an Aymará *fiesta*, after suddenly awakening from meditations upon the grandeur of South American landscape, is to fall from the sublime to the ridiculous. On these carnival days, the Indians wear the most fantastic costumes, showing, however, a decided preference for bright colors. In appearance, they might be compared to a high order of scarecrows; and to see a procession of them rushing out of the church in wild confusion and rallying, with an image of their patron saint, for a grand *finale*, after a day of intoxicating revelry, is to be forcibly reminded of an insane asylum let loose. The favorite sport consists of a kind of tournament, in imitation of a Spanish bull-fight, that is carried on for hours at a time in all possible phases. They equip themselves with the heads, horns, and hides of cows, which are to be had at Puno, and, after drying them in the sun, they are suspended by their belts, and then, probably for propriety's sake, the animal is clad in skirts that hang modestly to the ground. Some play the *toros*, while others impersonate the *toreros* and *matadores*, and the whole population turns out on the *plaza*, to pay homage to the celebra

tion. Throughout the greater part of these exercises, the Indians, old and young, are very grave and serious. A funereal solemnity reigns supreme, and no revelry is indulged in until they become too intoxicated to follow the leading chief in proper order.

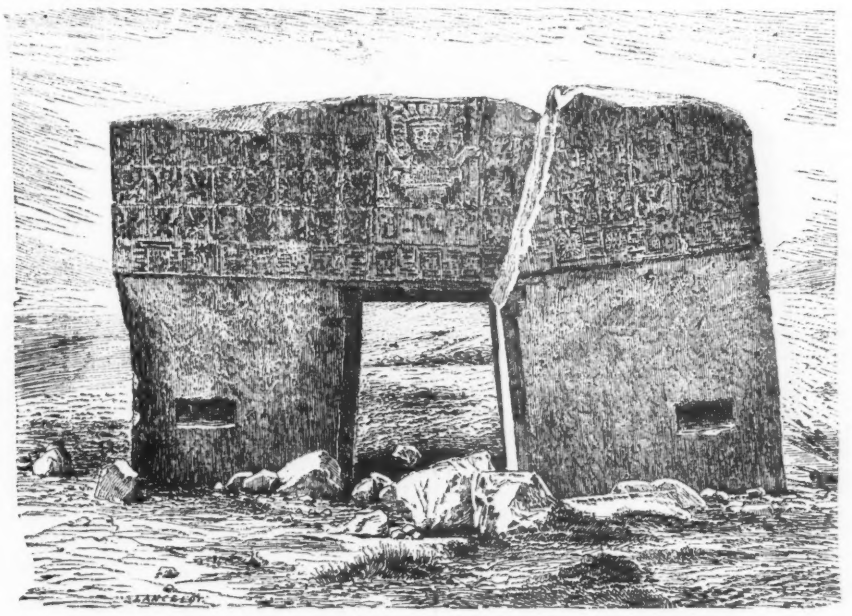
The dress, manners, and general appearance of the Aymarás are about the same as those of the Quichua tribe. The women, however, are more thickly set, better looking, and apparently in a more cheerful frame of mind than the Quichuas.

Altogether, the lake region is healthy, and there appears to be but very little sickness. As night draws on, the cool winds sweep rapidly through the gorges and ravines of the great mountain ranges, oftentimes with the speed of a whirlwind, running the dust up into columns of immense hight, and drawing up the water from the surface of the white-capped lake in spouts almost equally high.

At Puno, a Peruvian city of 5000 inhabitants, the nights are often bitterly cold; and as llama-dung and *tola*, a variety of moss, are the only fuels in the land, the luxury of warm hearths is unknown. Early in the evening, the people wrap themselves in shawls and cloaks, or go to bed for comfort. The region adjacent to Titicaca supports a population of more than one million. Puno, the largest town, is mostly inhabited by Aymarás, although there are a few Quichuas who form a set by themselves. The city owes its origin to the silver mines of Cancharani, in the neighboring hills, which are now comparatively abandoned, although claimed by some not to be exhausted. All the dwelling-houses are built of adobe, and are very low and uncomfortable; but the city boasts of a cathedral that dates back to 1757, a university (so-called), and several schools. It is the central point for the alpaca industry; coca is also largely traded in, while sheep's wool and vicuña robes are among the chief exports.

The lake, which is the natural highway between Peru and Bolivia, is navigated by two small 100-ton steamers, which were transported from the coast over the mountains in sections, under great difficulties and at an expense far exceeding their cost. Steam is got up with llama-dung as the sole fuel, and the trip across to Chililaya, in Bolivia, is made in about twenty hours.

Among the intermediate places of exceptional interest, at which the steamer touches during this memorable passage, the church of Copacabana deserves especial notice. This quaint old church of semi-cathedral, semi-monastic appearance, is to this section of South America in reputation and ecclesiastical importance, what Notre Dame is to France. It contains the famous *milagrosisima virgencita*, or little miraculous virgin, and, although the edifice has no definite style of architecture, but in detail is a combination of Doric, Corinthian, and Spanish Renaissance, it is nevertheless graceful and most picturesquely situated. Its high walls inclose a rare collection of precious jewels and choice gifts, valued at many millions, which have been offered up as grateful tributes to the supernatural powers and astounding miracles of the Virgin. At stated periods, great multitudes come from all parts of Bolivia, and assemble before the sacred shrines of Capacabana, to supplicate spiritual and not unlikely material blessings. It is a fact strange, but none the less true, that the most acceptable and favored prayers are said to be those of the women imploring deliverance from sterility; for it is well known that in these elevated barren regions



MONOLITHIC GATE-WAY AT TIAHUÁNACO.

THE AYMARÁS AND QUICHUAS OF LAKE TITICACA IN BULL-FIGHT PARADE.

and in this rarefied atmosphere of the Andes, people do not multiply in any thing like the same proportion as the population of the deep, fertile valleys, surrounded by a greater amount of vegetable life and a more normal atmospheric pressure. And it is the ability to happily reverse this natural law that is claimed as the immaculate accomplishment of the *milagrosisima virgencita*. It has been irreverently suggested, however, by modern scientists of deep penetration, that the credit of effectually alleviating this affection is possibly more justly due to the altogether terrestrial supplications of the priesthood of Capacabana than to the more celestial influences of the *virgencita!*

The environs of this romantic and religious spot are strewn with the art relics of imperial Inca glories. These architectural and sculptural relics on the borders of Lake Titicaca are frequently cited by scholars as representative examples of what is called pre-historic art, by which we understand all art forms, irrespective of chronological order, that show human faculty at its best in this domain, before it has been touched by civilization. The extinct tribes that once inhabited this wild region have left to the world a museum of most interesting relics in this important field of knowledge, whose lights are few and dim. Indeed, according to Humboldt and others, these innumerable abandoned towns, gigantic monuments, remnants of public works, and scattered cemeteries indicate that the basin of Titicaca was once the seat of probably the highest and most ancient civilization on the South American continent, whose vast population, forming an empire greater than that of Charlemagne, swarmed over the land and has left behind in these stone remains of hoariest antiquity, the evidences of superior power and skill.

According to tradition, the region of Titicaca was not only the home of the Inca race, but also of the great Peruvian law-giver, Manco-Capac, who diffused his influence throughout the land. An appreciation of the remoteness of this era may be had when it is remembered that the ancient Peruvians had only the vaguest ideas concerning the ruined edifices of Titicaca; and furthermore, that the eminence supporting the ruins of Tiahuánaco, to-day twelve miles from the lake and considerably over 100 feet above its surface, was formerly a beautiful island in the midst of deep water. This fact, coming so nearly within the historical period, and on that account of unusual geological interest, warrants the belief that the art-relics of Titicaca antedate all others known on the American continent. Authorities hold that the ruins of this desert island bear the same relation to the aboriginal monuments of South America as do those of Palenque to the old remains of the Central and North American continent. They indicate a much higher order of artistic attainment than existed anywhere in South America at the time of the Spanish conquests. They tell us the story of brave races of men, struggling after higher conditions; and their weird forms stand in the wilderness like the skeletons of prophets who looked far down the track of the centuries and foretold a better time. They are indeed achievements of intellect worthy to be commemorated in history.

No. 78 Broadway, New York.

COLORADO NOTES.

Special Correspondence of the Engineering and Mining Journal.

As a considerable amount of New York capital is invested in this country, perhaps a few words about the mines may be of interest to some of your readers.

At Caribou, a number of mines are working with good results. Two new strikes of considerable importance are reported—one in the Belcher, and one in an old prospect that has been worked a little from time to time for a number of years.

That the Caribou mine should be idle, is a great hinderance to mining operations in this camp, for the reason that a number of mines on the same hill are so connected with it as to render it impossible to operate them without draining the Caribou, a work of greater magnitude than the probable results would justify. It seems that the two principal owners of the Caribou are not on very friendly terms; and one of them is reported to have said, in substance, that work on the mine would never be resumed while both lived.

At Ward, there is considerable activity, although most of the mines are worked in a small way by lessees, who seem to be doing very well.

Mr. Hulings's operations on the Columbia are the largest and most successful in the district, which is as it should be; for to the steady, persistent work done by Mr. Hulings, the camp is indebted for its present prosperity.

A large number of claims on the Columbia—it was originally taken up in hundred-foot claims—have been bonded by Mr. W. A. Davidson, who is engaged in working up a sale.

The Humboldt group of mines, and the ten-stamp mill in Ward, belonging to the same property, have been leased and bonded to Mr. E. S. Fleming, late of Georgetown.

Among the other properties now worked may be named the Morning Star, Modoc, Boston (formerly the Comet), and the Nelson, belonging to Delavan Peck, of Albany, New York. The Utica has been leased, and work is expected to begin soon. A new Davis pulverizer is erecting in Mr. Hulings's concentrating mill. I will tell you more about it if it proves a success.

The principal excitement, at present, is over a strike in the White Crow mine, at Sunshine. I was told yesterday, that the lucky lessees had a foot of solid telluride, worth six dollars a pound. Owners and lessees are very reticent, but admit that they are doing very well indeed.

The sampling-works report the receipt of considerable quantities of good ore, and seem to be doing a good business. H. F.

Boulder, Colo., Oct. 2.

Volcanic Eruption in the Friendly Islands.—A Melbourne dispatch, October 5th, says that a volcanic eruption has occurred on the island of Niapu, one of the Tonga group of the Friendly Islands, destroying every village on the island. The inhabitants escaped. The island is covered twenty feet deep with volcanic dust, and at one place a new hill 200 feet high has been formed.

ARE THE PENNSYLVANIA COAL POOLS UNLAWFUL COMBINATIONS?

From Harrisburg, Pennsylvania, October 2d, Governor Pattison addressed a letter to Attorney-General Cassidy on the action of the anthracite pool, and requesting him to move against it in court. In the course of his letter, the governor says:

"My attention has been directed to the fact within the past fortnight that certain corporations chartered by the commonwealth of Pennsylvania, acting in concert, have ordered two advances in the prices of anthracite coal. It has been ascertained upon inquiry that these corporations comprise what is known as the anthracite coal combination, which was created in its present form at a meeting held in New York, on December 31st, 1884, when there were present representatives of the Delaware, Lackawanna & Western Railroad Company, the Lehigh Valley Railroad Company, the Philadelphia & Reading Railroad Company, the New York, Lake Erie & Western Railroad Company, the Delaware & Hudson Canal Company, the Pennsylvania Coal Company, the Lehigh Coal and Navigation Company, and the Pennsylvania Railroad Company.

"At that meeting, an agreement was entered into by which six of these corporations were in effect pledged in writing to restrict and regulate the production of coal, and to maintain and advance its price. An apportionment of the total production was then allotted to each company for the year 1885, and on January 1st, 1886, a new allotment went into operation, based on an annual production of 33,500,000 tons."

After referring to the advance of 30 cents a ton in the price of coal since July 2d, 1886, the governor says: "Recently, through the offices of a syndicate of capitalists, there has been a strengthening of the anthracite coal combination, and the claim is now made by some of its members that they can mark up coal prices to any figure they please, thereby subjecting the public to their mercy, injuriously and unwarrantably taxing every fireside, and imposing upon coal consumers the financial burdens which the speculations of some of these companies have engendered. Although the State Constitution declares that 'no incorporated company doing the business of a common carrier shall, directly or indirectly, prosecute or engage in mining or manufacturing articles for transportation over its works;' yet all, or nearly all, of the common carriers represented in the anthracite coal combination are engaged, directly or indirectly, in the mining of coal.

"The anthracite regions of the State are practically under the control of this combination. For long periods, it has kept the mines running on 'three-quarter time,' thus putting nearly one hundred thousand workers on what amounted to 'three-quarter' pay. By hindering competition, it has restricted the development of our mineral wealth. It has advanced or depressed the price of coal, as best suited its purpose. It has maintained the prices of coal supplied to line and to city trade at figures ranging more than $1 per ton over and above the prices at which it sold the same article to consumers located farther from the mines, but in territory that did not come within the terms of agreement. It has advanced the charges for transportation in face of the fact that the net earnings of the carrying companies belonging to the combination amounted to about 19 per cent per annum of the cost of the roads and their equipment, and of the further fact that charges are higher than they were twenty-six years ago, though the cost of transporting a ton of freight does not to-day amount to more than one third of its cost at that time. By restricting the production and advancing prices, it has crippled the vast iron interests, decreasing the demand for anthracite coal, and, in the reduction of iron ores, forcing the iron furnaces out of blast and placing nearly all the industries of Eastern Pennsylvania at the mercy of the managers of these companies."

The governor also calls attention to the trunk line pool, which he says, by its arbitrary power, holds a perpetual menace over the material interests of the country. In closing, the governor says: "Against such combinations the individual is helpless. The Commonwealth of Pennsylvania, in creating the corporations that are members of the anthracite coal combination and of the trunk line pool, vested them with the right of eminent domain and other franchises of a public nature. They owe certain duties to their creator, and one of these is to avoid any infringement upon the rights of individuals or the general well-being of the State. Their interference with the natural current or condition of trade has been in violation of what is believed to be sound public policy, and against the best interests of the State. It prejudices the public and oppresses individuals, and it is a perversion of the purpose for which they were created. These facts, which have been reported to me, and measurably authenticated, I deem of sufficient importance to refer to you for your consideration and for such action as the circumstances may warrant."

It is understood Attorney-General Cassidy will at once proceed against the coal pool, but in what manner he has not yet decided.

Tungsten Steel for Magnets.—M. Heppe states that the combination of tungsten with steel in the proportion of a one hundredth part produces a steel capable of retaining its magnetization unaltered for a much greater length of time than the ordinary qualities.

Victorian Railroads.—The Victorian government has, says *India and the Colonies*, decided to ask Parliament to vote £300,000 for the immediate purchase of new rolling stock and locomotives for the Victorian railroads.

Magnetic Moment of Cobalt.—M. Berson, describing some experiments upon the influence of temperature upon magnetization, in the *Annales de Chimie et de Physique*, states that the magnetic moment of a bar of cobalt *increases* continuously with the temperature up to 318 degrees C., which is as far as the experiment has been carried.

Train Lighting.—On the Wurtemberg State Railroad, an attempt is making to utilize electricity for train lighting. Storage cells are employed, charged by means of a dynamo that is driven from the axle of the guard's van. A very simple form of coupling has been devised for making the electrical connections between the carriages, and no trouble has hitherto been experienced in this matter, although only one train has yet been fitted up.

THE END-LINES AND THE EXTRA-LATERAL RIGHT.*

(*Concluded from page* 242.)

But the Elgin decision goes much farther. In the editorial article just cited, I made the following statement:

"There are two distinct questions involved. One is, Shall the surveyed end-lines of a location, duly made and even patented, be the lines through which vertical planes shall be drawn to bound the extra-lateral rights of the locator or patentee on all lodes having their apexes within his claim, or must other lines be drawn, corresponding with the dip of the vein on which the location is made? The other is, When the apex of a lode does not cross the surveyed end-line at all, but departs from the claim across a side-line, so that, under the Flagstaff decision, the side-line becomes an end-line, shall the vertical bounding plane be drawn through the existing side-line, or parallel with the other end-line (in case the latter *is* crossed by the apex), or at right angles to the local true course, or the general true course, or the local or general surface course, of the lode? Both these questions are multiplex; but the distinction between them is manifest. In the one case, a line already exists, which the letter of the statute recognizes; in the other, a new line has to be drawn, which the construction of the statute requires."

It is the answer given to the second of these questions by the Supreme Court which seems to involve startling consequences. According to the language of the foregoing decision and the Flagstaff decision, if the apex of the lode on which a claim has been located does not cross the surveyed end-line, but departs from the claim across a side-line, that side-line becomes an end-line. In the Flagstaff case, the lode crossed both side-lines, and there were therefore two parallel end-lines. But in most such cases, through error in the survey, due to ignorance as to the entire course of the apex through the claim, the lode will be found to cross one of the end-lines, but not the other. In that case, the legal end-lines are not parallel. It would be manifestly illegal and unjust to project them as they are, as boundaries of the extra-lateral right; and in the passage quoted above, I suggested all the ways I could conceive of making them parallel. But the one answer which I did not imagine is the one given in this decision. The court declares that when one side-line becomes an end-line, and is not parallel to the other end-line, the claim is one which can have under the law no extra-lateral right at all. The owner can not follow his lode on its downward course beyond the side-lines anywhere.

More than this: if a location contain the apexes of several lodes, and the one first discovered and made the basis of location departs from the claim across one side-line, while all the others cross both end-lines, the extra-lateral right is void as to all. For the court says plainly (and justly) in connection with another point, "It often happens that the top or apex of more than one vein lies within such surface lines, and the veins may have different courses and dips, yet his right to follow them outside of the side-lines of the location must be bounded by planes drawn vertically through the same end-lines."

The lode upon which the location is made must determine the form of the location, which must follow its surface outcrop, or its edge nearest the surface, wherever that goes; and the two end-lines need not cross that "apex" at right angles, but they must cross it, and they must be parallel. If they fail in the first particular, the lines that do cross the apex become the true end-lines, and if these are parallel, the owner is lucky; but if they fail in the second particular, there is no remedy; the lode-claim is no lode-claim at all, but a small and high-priced placer-claim.

True, the court says there is a remedy, which "must be found, until the statute is changed, in carefully making the location, and in postponing the marking of its boundaries until explorations can be made to ascertain, as near as possible, the course and direction of the vein." But neither this remedy nor the change of the statute, for which the court not unnaturally seems to yearn (as we all do), could avail those whose locations or even patents have existed for years, whose mines have long ago passed in depth beyond their side-lines, and whose entire rights of property in them are now suddenly made dependent upon a geological phenomenon never before supposed to be so vitally controlling.

The peculiar form of the Stone claim, commented upon by the court, is the result of an attempt to obey the law as construed in the Flagstaff case. The claim simply follows the course of the "apex," which is crooked by reason of erosion, though the true course of the vein is straight. Having followed this irregular and somewhat obscure apex as far as the law allowed, the surveyor tried to make an end-line parallel to the one he started with, namely, with the north end-line, which is doubtless the boundary of an adjoining claim. But he placed his corner a few feet west of C, instead of east of it; and this error is held to have vitiated the whole claim. There is abundant evidence in the diagram itself of the good faith of the Stone locator in attempting to make a valid location under the extreme difficulty caused by an exceptional combination of statutes, judicial decisions, advice of counsel, and freaks of topography. In the Flagstaff case, the Supreme Court, taking into account the great difficulty of making a location, said:

"Slight deviations of the outcropping lode from the location of the claim would probably not affect the right of the locator to appropriate the continuous vein (and the meaning evidently includes the extra-lateral right); but if it should make a material departure from his location, and run off in a different direction, and not return to it, it certainly could not be said that the location was on that lode or vein *farther than it continued substantially to correspond with it.*"

Now in the Flagstaff case, the location was laid squarely across the vein, which the court said "it was not the intent of law to allow;" and the punishment for this open violation of the intent of the law was, that the locator acquired a perfectly good lode-claim, with the pertaining extra-lateral right, for all that portion of the lode between the two side-lines, operating as end-lines. In the case of the Stone claim, on the other hand, the locator tried with all his might to carry out what was the intent of the law, and failed by a few feet at one corner of his claim; and the punishment for this unintentional error is, that he gets no lode-claim at all.

It seems to me that this "slight deviation" at C, in the diagram, is a case fairly within the principle of the sentences just quoted; and, moreover, that the words which I have italicized above fairly imply that a lode-claim is *valid*—that is, carries the extra-lateral right—as far as it continues substantially to correspond with the lode.

Hence, I think that in the spirit of the Flagstaff decision, though the precise point is not covered by that decision, the Supreme Court might have made in the Elgin case either of the following decisions:

1. The south end-line of the Stone claim is not strictly an end-line. It crosses the true course of the lode, but it does not cross the legal apex, as defined by this court and determined in this case by the accident of erosion. But the locator has evidently tried to comply with the law, and has come so near succeeding that we hold the said south end-line to be practically the end-line of his claim.

Or, 2. Since the south end-line fails to cross the apex, the court directs that the south boundary of the extra-lateral right of this claim shall be a vertical plane through the point C, parallel with the said intended end-line and with the actually and correctly established north end-line.

In either of these cases, the actual result of the case at bar would have been the same as under the decision here criticised; for the two end-lines, projected on the diagram, would not include the ground in controversy. That is a result that gives no just cause of complaint. When the prior locator fixes the direction of his end-lines, he can see at a glance just what ground this projection will include, and he must abide by the consequences. It is noticeable that at the close of the Elgin decision the first of the above alternative points is mentioned, and the court says, "*In either view* of the location of the Stone claim, the rejected proof would have established no defense,' meaning either its own principal view, or this alternative one. This indicates, perhaps, that if the case had really depended upon the recognition of the "south end-line," and the condoning of the "slight deviation" of the apex, the court might have considered that point more seriously. But it is plainly enough the view of the court that, in a case of more pronounced character, as where a location is a simple parallelogram, and the apex of the located lode clearly crosses one end-line only, and then departs from the claim across a side-line, the location carries with it no extra-lateral right. I think this is an unfortunate rule; and it seems to me that, without going so far as Chief-Justice Waite and Justice Bradley, who would judicially rectify all end-lines, the court might with consistency and propriety and advantage adopt the following principles:

1. Parallel end-lines crossing the apex of the located lode shall determine the boundaries of the extra-lateral right; *provided*, that small deviations of the apex, when the circumstances are conclusive of an attempt, in good faith and with painstaking, to carry out the intent of the law, need not be construed as rendering an end-line invalid.

2. When one end-line crosses the apex of the located lode, and the other does not, but the apex departs from the claim across a side-line, not parallel with the valid end-line, and the deviation is too great to be overlooked as unimportant, then the boundaries of the extra-lateral right shall be a vertical plane drawn through the valid end-line, and a vertical plane parallel thereto, drawn through the point where the apex of the lode passes under and across the side-line of the claim.

3. When neither of the declared end-lines of the claim crosses the apex of the located lode, but the apex is crossed by two side-lines, which are parallel, the extra-lateral right shall be bounded by vertical planes drawn through the said side-lines, exactly as if they had been the declared end-lines of the location.

4. But when, in the foregoing case, the two side-lines crossing the apex are not parallel, the extra-lateral right upon the located lode shall be bounded by two vertical planes drawn through the points where the apex passes under and across the said side-lines at right angles to the general course of the apex between the said points.

5. The boundaries thus determined for the extra-lateral right upon the located lode shall apply also to all other lodes, the apexes of which are within the location.

Of these principles, the first is already announced in the Elgin decision, except as to the proviso, which is in accordance with the spirit of the Flagstaff decision, and not absolutely contradicted by the former. The second and fourth are contrary to the Elgin decision. The third is expressly declared in the Flagstaff case. The fifth is practically declared by the Elgin decision, and seems to be required by the letter of the statute. This I admitted in my former paper (*Transactions* XII., 441), and showed at the same time what trouble might come of it. I confess that the imaginary case shown in Fig. 4 on the page cited, has not yet, so far as I know, come before the courts; and perhaps, bad as it looks on paper, we can afford not to worry about it while so many perplexities press upon us in other aspects and applications of the statute.

The law of the apex and its extra-lateral right are prolific of difficulties, doubts, contradictions, and absurdities. Every judge that administers it utters a fervent hope for its amendment. But the only effective amendment would be the introduction of that system under which the mine-owners of the East and the placer-owners of the West get along in complete security and peace. Let the government cease to grant a thing which it can not define. Let the citizen know without the aid of geologists, lawyers, juries, and courts, what he has got when he has located and purchased a claim. Make the lode laws resemble the placer laws and the coal land laws and the homestead and pre-emption and other agricultural land-laws, and the mining land-laws of all other civilized countries. Banish that elusive thing, the apex, to the limbo of vanity, where it belongs. Put an end to the supernatural extra-lateral properties of end-lines and their infinite projection into space. Let side-lines remain in that situation to which providence and the surveyor have called them, without danger of being suddenly exalted into end-lines, possessed of transcendental potencies. In short, let us have a mining law, and not a chaos of confusion, ameliorated at long intervals by the well-meaning interference of the Supreme Court, which sets to rights a little corner of the hubbub, and necessarily raises as much dust as it lays. We are slowly

* From a paper on "Lode-Locations," by Dr. R. W. Raymond, presented at the Bethlehem Meeting of the American Institute of Mining Engineers, May, 1886. [*See* this JOURNAL, page 222, September 25th, 1886.]

getting authoritative decisions of one point after another ; but the best thing about them is, that they show us with increasing clearness how bad the law is.

Hitherto, the sentiment of the mining communities has stood in the way of a radical reform. I fear that, even yet, it would prove unpopular and impracticable to pass such a bill, for instance, as that introduced by Hon. G. G. Symes, of Colorado, at the last session of Congress—a "square location" bill. But it ought to be pressed and discussed until the public sentiment of the West shall have been educated up to it. I think the situation has so far improved that, if such a law were now enacted, it could be enforced and would work well.

OPENING A CHILLED HEARTH WITH THE COAL-OIL BLOW-PIPE.*

By R. H. Lee, Jr., Lewistown, Pa.

So far as I am aware, the references to the "kerosene blow-pipe" in the Transactions comprise only a skeptical opinion from Mr. Witherow (IX., 70), and accounts of the use of the blow-pipe by Mr. Witherbee (XIII., 675), and Mr. Gayley (XIV., 779), together with brief remarks by Mr. Weeks and Mr. Kennedy on Mr. Witherbee's paper. The subject can scarcely be considered novel, in view of these references, yet it is not so far exhausted that an additional account of the successful application of the blow-pipe would be out of place, especially if accompanied with some new details and a drawing of the apparatus itself, showing its simplicity and safety.

Some time ago, owing to a variety of causes, my furnace was working very badly, the troubles culminating suddenly one morning in a chilled hearth, solid from the bottom to the tuyeres, with the exception of a narrow passage-way from above to the cinder-notch, which remained open. Through this, we continued to flush and cast, with the prospect of a long and troublesome siege, in working down to the iron-notch. At the end of two days, matters had not greatly improved, and we seemed no nearer the desired result than on the morning of the chill, when, at the suggestion of Mr. Farrell, of Glamorgan, I decided to use the coal-oil blow-pipe ; the intention being to cut a hole from the iron-notch up to the tuyeres, and then let the furnace melt out the chilled mass.

In four hours from the time of starting, the hole was made and air from the tuyeres was blowing out of the iron-notch. The blast was kept blowing through for about an hour, to melt out as much of the chill as possible ; the notch was then stopped with a mixture of coal-dust and sand, and the furnace was started up. We were able, after this, to keep the notch open without any difficulty, and in a short time the entire hearth was melted out and the furnace working as usual.

I had occasion once afterward to open with the blow-pipe a hard iron-notch caused by a leak in the dam. The entire operation required about an hour, saving both time and labor.

[The apparatus is described by Mr. Lee.]

In starting, the nozzle should be placed six or eight inches from the material to be melted, and not moved until it is melted in two or three feet, the apparatus seeming to work best within this range. Should it be necessary to push the nozzle inside the furnace, it can be covered with a common 3-inch drain-tile, which will last as long as the pipe is not moved, but will probably fly to pieces as soon as any rough jar affects it. There should also be a space of four or five inches between the nozzle and the bottom of the notch, to allow the melted materials to flow out.

In turning on the oil, the best plan is to give a rather large amount at first, and then lessen it gradually, until the proportions of oil and air are right. This is shown by the disappearance of all flame, and by a steady, continuous screech, instead of a succession of sharp explosions. The amount of oil consumed when the blow-pipe is working its best is exceedingly small. Merely loosening the regulating valve affords an ample quantity.

Petroleum Discovery in New Zealand.—A discovery of vast importance to New Zealand is announced. Oil has been struck near Gisborne, and the well is producing fifty barrels a day. It is believed that there is an unlimited supply, requiring only further appliances to increase the quantity obtained very largely.

Melting Flint Glass in Open Pots.—Glass manufacturers are interested in some experiments conducted by the Chicago Glass Manufacturing Company in the use of a Siemens glass-melting furnace, with open pots, for flint glass. This is the first attempt to melt flint glass in open pots with the Siemens furnace, and only the second to use open pots for this kind of glass. The first attempt was made by Berger Brothers, of Philadelphia, but they ultimately returned to closed pots. It is claimed that the new process will melt glass in 7 hours and 45 minutes, while the old fashioned furnaces take from 15 to 24 hours. Thus a great saving of fuel is effected.

The French Prize for Electrical Discovery.—By a decree dated June 11th, 1882, the government of France offered a reward of 50,000 francs for the discovery of greatest value relating to the utilization of electricity for any of the following purposes : As a source of heat, of light, or of chemical action ; as a means of transmission of mechanical power, or of verbal communication in any form ; or, finally, as a curative agent. The Minister of Instruction has now announced that June 30th, 1887, will be the latest date for entering the competition, and that the prize will be awarded in the following December. The competition is open to all without restriction, and *savants* of all nations are invited to participate in the award.

The Comstock Machinery to be Run by Water.—The Pittsburg *Times* says that General Manager J. H. Flagler, of the National Tube-Works, has just closed negotiations with the Comstock Lode managers for an order of 27 miles of the best quality of 12-inch pipe. The pipe is to be used in laying a line from some of the Comstock mines to a lake in the Washoe Mountains. It is the intention of the mine operators to pipe water from the lake and use it instead of steam for running all the machinery, in addition to the other purposes for which it will be needed. The Comstock people built a similar pipe line several years ago, the construction of which was personally superintended by Manager Flagler.

Steel Pipe Making in Germany.—It is reported by the Berlin *Eisenzeitung* that the new process for making steel pipe employed at Burbach is very successful. A syndicate has been formed to build works at Burbach, the capital being 1,200,000 marks, of which 500,000 marks are issued to the patentee, A. Mannesmanne, of Remscheidt. It is stated that Funke & Ebers, of Hagar, Germany, have also purchased patent rights, and a large firm in Paris proposes to apply the method to the manufacture of copper tubing. As to the process : As soon as the steel is cast into the round mold, a core is thrust into the steel so that a tube is formed between it and the walls of the mold. In order to prevent the cracking of this annular casting during cooling, the core is so made that it follows up the shrinkage of the steel. The steel cup thus obtained may then be rolled in an ordinary train.

The Object-Glass of the Great Lick Telescope.—Prof. C. A. Young, in *Science News*, says : The object-glass of the great Lick telescope is now practically completed, and only awaits examination and approval by the experts who are to be appointed by the Lick trustees to test it. This enormous lens, by far the largest ever made, is thirty-six inches in diameter, and has a focal length of fifty-seven feet. It is composed of two lenses, of which the front one (outside) is an equi-convex lens of crown glass, while the other is a concave lens of flint glass ; one side of this—the one next the eye—is very slightly concave—in fact, almost flat ; the other, next the crown-glass lens, is considerably concave, the curvature being somewhat deeper than that of the crown-glass surfaces. The inner surfaces of the two lenses are separated by a clear air-space of about six and a half inches, and there are perforations in the steel cell that allow a free circulation of air between them. The glass disks were made by Feil, of Paris, and they have been figured and worked by our own Clarks at their modest but famous establishment in Cambridgeport.

The New Zealand Earthquake.—The disastrous earthquake in New Zealand, which began on the night of June 10th, has, says London *Engineering*, destroyed some of the most remarkable natural beauties of a geological character in the world. The top of Mount Taramera has been blown off and an immense quantity of dust thrown out, destroying among other things the famous pink and white terraces or cascades of sinter that had begun to draw tourists from all parts of the world, and promised to rival the Yellowstone Park geysers. The noise of the explosion was heard 300 miles, and an observer 150 miles from the scene saw the column of ashes that accompanied it. This column is supposed to have ascended no less than 22,000 feet into the air. At distances of from 30 to 40 miles from the site, the ashes were found in a layer several inches thick. The district has been of an igneous and volcanic character as long as tradition tells, and is replete with boiling springs, mud fountains, steam vents, and so on. In fact, it bears a resemblance to the Yellowstone District, and we may well ask ourselves whether all volcanic energy is at rest in the latter, and whether at some future day the latter may not be visited by a similar catastrophe. One peculiarity at Taramera was the flame and "fire-balls" accompanying the explosion. Of lava in the ordinary sense there appears to have been little or none. It was simply a great and sudden explosion of imprisoned gases, dust, and steam. Further investigation will, however, throw more light on the matter.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book-buyers, give the retail price!]

Annual Report of the Geological Survey of Pennsylvania for 1885. By the State Geologist. The Report contains 5 Folded Plates, 13 Page Plates, and 51 Page and Text Cuts, and is accompanied with an Atlas of 8 Sheets of Maps and Sections. Harrisburg : Published by the Board of Commissioners for the Geological Survey. 1886. 8vo, pages xxxix + 769 (including Index).

State of Michigan. Mineral Resources. By Charles D. Lawton, A.M., C.E., Commissioner of Mineral Statistics. By Authority. Lansing. 1886. 8vo, pages vi + 288.

We have already given, in the columns of the Engineering and Mining Journal, under the title, "The Agogebic Iron Range, Michigan," a great deal of matter from this work. *See* our issues for July 31st, August 14th, and August 21st, pages 77, 112, and 131.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

GRANTED SEPTEMBER 28TH, 1886.

349,691. Hoisting-Pulley. Horace Butters, Ludington, Mich.
349,700. Expansion-Drill for Boring Wells. Joseph F. Dye, Santa Paula, Cal., Assignor of one half to Sutherland Hutton.
349,705. Steam and Gas-Engine. Dennis Frisbie and Edward M. Lockwood, Philadelphia, Pa., Assignors to said Dennis Frisbie.
349,715. Electric Motor. Enos T. Higham and Daniel Higham, Philadelphia, Pa., Assignors of one third to James M. Jones, same place.
349,716. Dynamo-Electric Machine. Enos T. Higham and Daniel Higham, Philadelphia, Pa., Assignors of one third to James M. Jones, same place.
349,730. Rolling-Mill. Edwin H. Martin and John Beavis, Cleveland, Ohio.
349,755. Kiln. Lenox Simpson, Bellevue, Alleghany County, Pa.
349,756. Brick-Kiln. Lenox Simpson, Pittsburg, Pa.
349,777. Pneumatic Pump. Reinhold Adlung, Pankow, Germany.
349,778. Amalgamator. George S. Armstrong, Denver, Colo., Assignor of one half to Julia E. Kiefer and William G. Hutchison, both of same place.
349,806. Apparatus for Turning Rolls. John McIntosh, Cleveland, Ohio.
349,886. Mold for Casting Compound Ingots. John Illingworth, Newark, N. J.
349,951. Pump. Thomas Patten, Jr., and Christian Anderson, Appleton, Wis.
349,981. Obtaining Sulphur from Hydrogen Sulphide. Carl F. Claus, London, England.
349,998. Compound Ingot-Mold. John Illingworth, Newark, N. J.
350,003. Dynamo-Electric Machine. Rankin Kennedy, Paisley, County of Renfrew, Assignor to David Graham, Glasgow, Scotland.
350,007. Drop-Hammer. Frank M. Leavitt, Brooklyn, New York, Assignor to the E. W. Bliss Company, same place.
350,069. Steam-Engine Indicator. Frederick R. Low, Chelsea, Assignor to the Ashcroft Manufacturing Company, Boston, Mass.

* Extracts from a paper to be read at the St. Louis Meeting of the American Institute of Mining Engineers.

PERSONALS.

Mr. Samuel Laughlin, president of the Mingo steel plant, and a resident of Wheeling, West Va., died of heart disease at Hurley, Wis., on the 27th ult., aged fifty-two years.

Mr. George F. Kunz, whose interesting paper on artificial rubies will be found on another page, is the accomplished mineralogist of Tiffany & Co., and enjoys the advantage of handling more gems, and gems of greater value, than probably any other mineralogist in the world.

A writer in a London paper says that he has made a "careful estimate of the stuff ejected during the recent eruption from the New Zealand volcanoes, and that it amounts, in round numbers, to 6,000,000,000 tons." This writer must be one of those "mining experts" the English promoters send over to this country to examine the American mines that they sell in London.

Nothing is more surprising than the tonic and strengthening effect of salt water or even a sea breeze on a gold or silver mine. A poor puny prospect-hole out West has only to cross the Atlantic once, and by the time it reaches London it is a "strong" and "healthy" lode, "mineralized throughout," full of "great strikes," and stronger and richer the deeper it is followed. From the merest shadow of a mine that would not yield "grub" to the industrious and abstemious Western miner, the sea air has invigorated it to such an extent that it not only can pay the liberal board of distinguished "guinea-pigs," but it promises a profit of from 20 to 50 per cent on several million dollars of the worthy investors. We have not noticed that any physico-mineralogico-medical authorities have heretofore called attention to this curious and important phenonemon.

FURNACE, MILL, AND FACTORY.

The Pittsburg Copper-Works, C. G. Hussey & Co., have rolled six plates of copper weighing 1200 pounds apiece, each two plates forming a circle 176 inches in diameter. They are intended for whisky stills, and are the largest ever made by this firm.

LABOR AND WAGES.

The closing of tin plate works in South Wales, now going on, will throw out of employment 4000 men.

The miners and laborers of the Amalgamated Association met in Plymouth, Pa., October 2d, to consider the wages question. No definite action was taken. It was shown that the men are not earning more than $26 a month, and on this amount they could not provide properly for their families during the winter season.

The half-yearly convention of District Assembly 80, Knights of Labor, composed of the miners of the Pittsburg District, will be held at McKeesport, on October 19th. A proposal to form a co-operative company to buy and operate a mine will be submitted. The capital will be $400,000 in $2 shares. District Master Workman Johnson says the miners will not strike for an advance, as the operators want a strike to raise the price of coal in the lower markets.

A special dispatch to the Pittsburg *Times*, dated October 3d, says that, some time ago, Hoover, Hughes & Co., Pittsburg contractors, who are building the Seaton Hill Seminary, near Greensburg, awarded the contract for 1,500,000 bricks to the Cambria Iron Company, which has a large brick-yard at Johnstown. The men employed by the contractors learned of this, and positively refused to do a stroke of work on the seminary building unless the contract with the Cambria Iron Company was rescinded, the reason being the well-known hostility of the Cambria Iron Company to the Knights of Labor, to which organization the greater number of the men employed belonged. It has just leaked out that Hoover, Hughes & Co. promptly canceled their contract with the Cambria people, and as a result the Cambria brick-yard is shut down for want of orders.

COAL TRADE NOTES.

ALABAMA.

The Birmingham *Age* of October 2d says; An association of gentlemen, citizens of Alabama, Georgia, Virginia, New York, and Philadelphia, much the larger interest being held in Richmond, have purchased from the Richmond & Danville Extension Company the entire capital stock, $500,000, held by it in the Coalburg Coal and Coke Company, carrying with it the ownership and control of about 12,500 acres of coal lands and rights along the line of the Georgia Pacific Railroad and the Memphis & Birmingham Railroad, on the waters of Five Mile Creek and Little Warrior River, in Jefferson County, Alabama, from six to sixteen miles west of Birmingham, and carrying among others the celebrated Pratt vein, superior especially for coking and steam purposes, mines opened and in successful operation (present output over five hundred tons a day), about 70 coke-ovens, buildings, tracks, cars, mules and other outfit, stock of goods, accumulated working capital, etc., at Coalburg, Ala., together with about 52 acres of land on Village Creek, about a mile north of Birmingham, Ala. (for furnace site, etc.); total, say 12,552 acres of land and rights with improvements, etc., as above. Besides this, these gentlemen have subscribed to $200,000 of new stock, at par, to be issued by the Coalburg Coal and Coke Company, which amount, together with about $100,000 of other available resources, will be at once expended in the erection of a furnace and additional coke-ovens, and in making additional openings and all necessary improvements for a large business in mining coal and manufacturing coke and pig-iron. The furnace will be located on Village Creek and the Georgia Pacific Railroad, about a mile north of Birmingham, on the 52-acre tract of land above described. The Elyton Land Company is now extending its Belt Railroad, for passengers and freight, to Village Creek, close by the furnace site. These gentlemen have also purchased a two-thirds interest in a body of land, containing nearly 1400 acres, adjoining the furnace site. All of this land has been subscribed to the capital stock of the North Birmingham Land Company, organized for the purpose of laying out and building on the land a city, to be called North Birmingham. It lies only from 1¼ to 3 miles from the city of Birmingham, and is admirably adapted for the purpose, being, indeed, in part, the very land upon which it was originally intended that the city should be founded.

The North Birmingham Land Company was organized October 1st, 1886, as follows: John W. Johnston, President; Walter N. Johnston, Secretary and Treasurer. Directors: John W. Johnston, James I. Garrett, John T. Milner, Andrew B. Johnston, John B. Boddie, Ira Y. Sage, E. M. Tutwiler.

ARIZONA.

Coal has been found in the Whetstone Mountains. The coal is said to be anthracite, and the vein is five feet thick.

ENGLAND.

An explosion occurred October 2d, in Altof's colliery, at Wakefield, near Leeds. Eight men were rescued alive from the burning mine, seven were found dead, and seventeen are missing. No hope is entertained that any of the latter may be found alive.

PENNSYLVANIA.

ANTHRACITE.

A *Tribune* dispatch, dated Philadelphia, October 5th, says: In the United States Circuit Court this morning, before Judges Bradley and McKennan, Mr. Gowen's motion asking for the dismissal of the Robinson suit upon the ground of want of jurisdiction was denied. The order appointing Mr. Corbin to the position of Receiver of the Reading Company, to enter his own bond in the sum of $100,000, and with the understanding that he was to receive no compensation for his services, was then drawn up and placed on record.

The suit of William M. Robinson, of New York, for foreclosure of Reading was continued to-day before Judges Bradley, Butler, and McKennan, in the United States Circuit Court. Justice Bradley overruled Mr. Gowen's plea as to the invalidity of the request as made by holders of one tenth in amount of the general mortgage bonds, and held that the complaint was entitled to a decree. A reference will be made to a master to ascertain the entire amount of the company's bonds now outstanding, and counsel will prepare a decree which will be submitted to the court on Thursday morning.

Associate Justice Bradley, of the Supreme Court, and Judge McKennan on the 4th inst. heard argument in the United States Circuit Court upon exceptions to the report of Special Master Dallas, in the suit brought by the Pennsylvania Steel Company against the Philadelphia & Reading Railroad Company. The report had recommende that the claim of the plaintiffs, amounting to over $92,000, for supplies furnished the Reading during a portion of the receivership, should be considered a prior lien to the several mortgages. The decision was reserved. The exceptions filed to Mr. Dallas's report in the suit of Hugh Penny and Alfred Sully for the foreclosure of the road under the income mortgage, after being argued, resulted in an order allowing Messrs. Penny and Sully to intervene as parties plaintiff in the Kelsey suit, thus consolidating the two suits.

BITUMINOUS.

Work has begun on the wharves and tipples of the Pittsburg Coal Dock Company, at Lashell station, on the Lake Erie road, just below Middletown, and it is expected, says the Pittsburg *Times* of October 6th, that before winter coal will be loaded in barges at that point. The names of the incorporators of the company are: John A. Caughey, L. M. Jenkins, W. B. Rodgers, J. R. McCreery, and William McCreery. The last named is the representative of the Imperial Coal Company, which operates two mines and a coke-works on the Montour Railroad, a short line that leaves the Lake Erie at Montour Junction. Owing to the dullness of railroad trade, the Imperial Company first projected the tipples, and its superintendent, Charles R. Brown, visited many of the best tipples and harbor arrangements on the Ohio and Kanawha rivers. A running arrangement has been made with the Lake Erie road, by which the Montour trains will be run to Lashell, about two miles below the junction. As the Imperial Company's work will not require the full time at the tipple, the coal of other companies will be loaded in barges also. Dredges are at work deepening the harbor, which is just below the Middletown wing wall, and abutments and ice piers will be built at once. The Dock Company has also placed a large order for hopper cars of the capacity of ten tons, and a large fleet of boats and barges will be in readiness when the tipple is in working order. This will open up for mines along the Pittsburg, McKeesport & Youghiogheny and Pittsburg, Chartiers & Youghiogheny roads river facilities where cars sufficiently large to pay for hauling can be handled.

TENNESSEE.

The East Tennessee, Virginia & Georgia Railroad has leased 350 coal cars (gondolas), and has numbered them in a series between 30,001 and 40,000. The road has also built 200 new ones at the shops in Knoxville. This gives a total of 550 new coal cars. They are of 50,000 pounds capacity each.

WEST VIRGINIA.

The Huntingdon & Broad Top Railroad is to make a connection through the Bedford & Bridgeport Railroad with the Piedmont & Cumberland, which is the line the Pennsylvania Railroad has under construction to the coal-fields of West Virginia. This will make a new route for the soft coal of West Virginia to Philadelphia, New York, and the East.

GAS AND OIL NOTES.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 2d:

	1886. Gallons.	1885. Gallons.
From Boston	4,091,492	6,999,707
Philadelphia	112,706,856	114,973,902
Baltimore	12,581,444	8,825,774
Perth Amboy	3,998,017	... ...
New York	296,838,339	288,289,857
Total exports	430,216,148	419,089,240

INDIANA.

A dispatch, October 3d, to the Chicago *Inter-Ocean* reports the finding of natural gas in Benton County, near Oxford. A well was bored on the land of Joseph Atkinson, to the depth of 100 feet, which at first produced a large quantity of water and gravel that was thrown high in the air. There shortly followed a volume of gas, which was lighted and blazed up twenty feet high. In 1856, a well was dug in the same locality, which produced gas in large quantities, and when lighted almost crazed the people, who filled the well immediately and abandoned well-digging. It is said a syndicate of Chicago capitalists and Isaac Sleepers, of Benton County, have leased a large tract of land, and will at once sink other wells.

PENNSYLVANIA.

A natural gas pipe burst recently at Oliver Brothers & Phillips's steel-works on South Fifteenth street, and the gas ignited. A fire-alarm was sent in, but the fire was extinguished before the engines arrived. Two of the employés were slightly burned.

The Pennsylvania Gas Company turned the natural

gas into its new main down Thirty-second street lately, to blow the dirt out of the pipes, and one of the furnaces in the Fort Pitt mill being still hot, the gas ignited and blew the furnace all to pieces. No one was injured and the damage was slight.

A number of New Brighton and Beaver Falls capitalists were in consultation with Jacob Henrici and Jonathan Lentz, of the Harmony Society, yesterday, says the Pittsburg *Times* of the 6th, regarding the formation of a new natural gas company to compete with the Bridgewater Company in supplying the Beaver Valley towns with gas. During the consultation, a tour of the Economy farms was made, and it has been learned that some definite arrangements were made looking to the formation of a company that would furnish gas much cheaper than the Bridgewater. The Economites have three wells already, from which thousands of feet of gas are going to waste daily. It is the opinion of experts that the Economy District is underlain by an inexhaustible supply of gas. The new company, if organized, will be backed with immense capital, and will be a formidable rival to the Bridgewater.

The Gailey well, on the Twyford farm, in the Shannopin District, has come in as expected, but is a big gasser instead of an oil gusher. It is a six or seven hundred pounder, however, and will be valuable, as it will probably be sold to the Bridgewater or Ohio Valley Gas Company.

The Mary McAllister well, owned by the Shannopin Oil Company, was shot on the 5th, and responded with an increase of 75 barrels an hour. It is believed to be good for a steady flow of over 50 barrels an hour for some time.

The No. 8 well on the Bayne & Fuller farm was one bit in the sand on the 5th, and giving 45 barrels an hour.

The Raccoon Solar No. 8 came in on the 5th, and is good for 1000 barrels a day.

WEST VIRGINIA.

A dispatch from Wheeling says that the fire caused by the malicious or careless ignition of a small leak in the Wheeling Natural Gas Company's main has been extinguished, the leak repaired, and the city is again well supplied with the new fuel.

GENERAL MINING NEWS.

The total shipments of ore from Ashland during the season of 1886, up to and including the week ended September 29th, were as follows:

GOGEBIC DISTRICT.

Ashland	49,900	East Norrie	8,778
Aurora	67,905	Nimikon	1,776
Iron Chief	9,030	Odanah	6,632
Bessemer	4,726	Pabst	14,150
Brotherton	8,509	Puritan	8,591
Colby	191,240	Sunday Lake	7,915
Iron Chief No. 2	530	Superior	2,021
Iron King	17,312	Trimble	7,208
Ironton	13,494	Pewabic	55
Germania	14,922	Valley	1,304
Kakagon	11,240		
Montreal	2,942	Total ore from Ashland	542,340
Norrie	98,507		

ALABAMA.

At a meeting of the stockholders of the Tennessee Coal, Iron, and Railroad Company, held at Nashville, Tenn., on the 29th ult., the purchase by this company of the Pratt Coal and Iron Company, the Alice Furnace Company, and the Linn Iron-Works of Birmingham, Ala., was consummated and confirmed. This action has brought together under one management probably the largest and most valuable coal and iron property in the world. The provisions of the consolidation put large capital in the treasury of the company and provide for the building of five additional furnaces of 200 tons daily capacity each, and the building of 1000 additional coke-ovens, the combined properties now having five furnaces and 1500 coke-ovens in active operation. Mr. Enoch Ensley, of Birmingham, Ala., was made president, and James Bowran put in charge of the financial affairs of the company in connection with Nathaniel Baxter, Jr., who will remain at the company's head-quarters as chairman of the executive committee. Mr. A. M. Shook, of Tracy City, has been made general manager; T. T. Hillman, of Birmingham, vice-president and manager of the furnaces.

ALASKA.

A Montreal dispatch, dated September 30th, says: Mr. Mercier, the well-known voyageur, has received information that there has been a rich find of gold on the bars of the Stewart River, one of the tributaries of the Yukon, which forms the boundary between Alaska and Canada. It is estimated that $24,000 worth of gold has already been realized, and settlers have sent for their friends and for improved appliances for washing the prolific sand and gravel of the bars.

Treadwell.—Mr. D. O. Mills has, it is reported, purchased the controlling interest in this mine for $400,000. Mr. Mills has also purchased the adjoining ground, and intends erecting another 100-stamp and extensive chlorination-works. In all, the investment is estimated at not less than $800,000.

ARIZONA.

Pima.—The mine has made many shipments of good ore, and now has thirty tons on the dump, which will be shipped forthwith. So far, the ore shipped has netted $86 per ton. The ore has been taken out from among the grass-roots, a large portion having been found in slabs that were gadded out after a foot or so of sand was removed. Some very singular features were encountered in this mine, and it gives evidence of being a valuable property.

COLORADO.

Chicago & Aurora Smelting Company.—The Chicago and the Aurora have recently consolidated; capital stock, $100,000.

Chrysolite.—The following official circular has been issued:

"New York, Oct. 5, 1886.

"To the Stockholders of the Chrysolite Mining Company:

"Since it is impossible to adjust and close the accounts of the company and to publish the usual full annual report before the stockholders' meeting, the following brief summary is submitted:

"By the last financial statement, the cash surplus on hand was $55,316.47. It is now (October 5th) about $63,000. No new ore-body has been discovered during the year, and the net receipts from ore, concentrates, and 'iron' sold to smelters have been small. The only important new work in the mine has been the sinking of a shaft to reach the 'second contact' at a point under the large ore-body of the 'first contact.' This second contact has been largely explored already in our property, and thus far, only a single body of a few hundred tons of good ore has been found in it. Everywhere else in the Chrysolite ground, the ore of this lower layer has been found too poor in silver to pay for working. On the other hand, several other mines of Leadville have developed large bodies of pay-ore in the 'second contact;' and although the experience of the Chrysolite in that respect has been so unfavorable, it was deemed advisable to sink the new shaft to test a portion of the ground not yet explored. This shaft is now over 200 feet deep, and will probably have to be sunk about 100 feet farther. It is estimated that the shaft will be finished, so that explorations can be commenced from the bottom, some time in January next.

"A trial-run made by the mill on ores from other Leadville mines has proved that such ores can be treated at a margin of profit when secured at terms somewhat better (for the ore-owners) than those which the smelters are willing to allow for them; but after this fact had been thus ascertained, the representatives of the ore-owners attempted to take what seemed to us an unfair advantage of the situation, by demanding more favorable rates than they have previously been willing to accept; and, rather than make the concessions required, the mill was closed, pending further negotiations.

"The above outline gives the general features of the situation, of which full particulars will be presented in the annual report. As to the future policy of the present management, if continued in power, it is impossible to say more at present than this: that the Board will feel bound to continue the explorations of the property so long as any reasonable chance of success remains, at the same time reducing the expenses in all directions, so far as the interests of the company will permit."

Colorado Central Consolidated.—For September, official returns sent to this Journal show that 95 tons were sold for $21,079. The raising of the mouth of the Ocean Wave tunnel, and the repairing and enlarging of the engine-room, are nearly completed, so that, as soon as the new hoister has been placed, the sinking deeper of the main shaft can begin.

Holden Smelter.—The Denver *Tribune-Republican* of September 28th says:

The new Holden smelter blew in one stack on last Friday, and will start the other two this week. The three stacks of the Holden smelter will have an average daily capacity of 120 tons; on ores of some classes, they could run 150 tons daily. The dust-chamber is supplied with sprays. An elevator, run by hydraulic power, passes through the center of the works, in which slag, dust, and matter can be carried from the furnace floor to the sampler. Ore that is run through the sampler can be carried to the roasting-furnaces, or other portions of the works, and delivered where wanted without manual labor. The Colorado Central has laid tracks into the works, so that ore can be unloaded where needed in the sampler, or on the ore-beds if desired. Ore is now received in abundance, the lead supply being mostly furnished by the Silent Friend mine at Monarch, which Mr. Holden purchased a few weeks ago. The control of this mine makes the smelter practically independent of the lead ore market. Mr. Holden will be the manager of the company, assisted by Mr. Chaunte, while Mr. Iles will be the metallurgist.

Sampson Mining and Milling Company.—The articles of incorporation of the new company have been filed. The capital stock is $250,000. The principal business office is to be in Silverton.

LAKE COUNTY.

The Leadville *Herald-Democrat* gives the following:

Breece.—The ore-shipments from this iron mine continue up to the contract with the steel-works at Pueblo. It is probable that the present contract with its expiration will be duplicated at the request of the Colorado Coal and Iron Company.

Douglass Mill.—This mill, in California Gulch, is doing good work handling the lower grade sulphide ores extracted from the Cord mine by lessees.

Henriett and Maid of Erin.—These mines produced 2500 tons during September. Out of this product, 2000 were extracted from the Henriett mine, and the remaining 500 tons came from dump and other lease work. Considering that the Henriett and the Maid of Erin have but recently been opened at depth, their yield must prove satisfactory, and will unquestionably be greatly increased in the near future. The Maid of Erin mine should now and will soon be producing as largely as the Henriett, when the output of the two properties will be enormous, reminding one of the days when the Iron mine shipped its 6000 to 10,000 tons of smelting ore a month. A steam concentrating plant has been erected at the foot of the Maid of Erin dump, and is turning out good concentrates from apparently worthless material. Certificates of incorporation for each of these companies have been filed with the county recorder: The Henriett Mining and Milling Company. Incorporators, H. A. W. Tabor, D. H. Moffatt, Bella S. Buell. Capital stock, $250,000, fully paid and non-assessable Principal office, Denver; seat of operations, Leadville. The directors for the first year are Eben Smith, H. A. W. Tabor, George W. Kassler, D. H. Moffat, and Bela S. Buell. The Maid of Erin Mining and Smelting Company. Capital stock $250,000; office, Denver, Colorado; place of operations, Leadville. The incorporators are D. H. Moffat, Bela S. Buell, and H. A. W. Tabor. The board of directors is composed of J. J. B. Du Bois, H. A. W. Tabor, Eben Smith, D. H. Moffat, and George W. Kassler.

Houghton.—About $600 a month are expended by this prospecting syndicate in the development of new ground on Iron and Carbonate hills.

Katy.—The St. Louis *Republican* says that Superintendent G. W. Crowe furnished the following *résumé* of operations: The main shaft is down 125 feet, with about 215 feet of drift work in two levels, one of the latter 80 feet from the surface and the other 125 feet; about 1800 tons of ore have been shipped since June, making $24,306 as the total output, the ore averaging $13.50. It is thought the ore-chute extends the length of the property, 1700 feet, and as the bullion was taken from 60 feet of stoping, an appropriate idea of the probable value of the mine can be obtained. Another shaft, the Midnight, about 500 feet from the main shaft, will be worked. It is about thirty feet deep now. About twenty tons of ore are shipped daily.

La Plata.—The shaft is making good progress, being down nearly 200 feet. There is little doubt but that it will disclose new resources.

Little Pittsburg.—Drilling has been abandoned in the No. 6 New Discovery shaft. The last few feet of the drill-core showed granite.

Louisville.—This mine produced, during Septem-

ber, about 1000 tons of ore, consisting of fair-grade mineral that must have netted, above all expenses, nearly $1000 a day.

Minnie.—A new drift is driving from the pump-shaft, which passes some distance beneath the ore-body as now opened, and prepares the property for more practical and economical working.

Morning Star.—The new forty horse-power double-cylinder hoister is getting into position, and will, with the cage that is going in, soon replace hoisting with buckets. The guides for the cage are nearly all in the shaft, and new cars have been received. The production of the mine continues very large, and will doubtless be maintained for some time, as the ore-body is unquestionably the same opened in the Henriett and Maid of Erin mines. The incline driven from the foot of the shaft is advancing to the westward with the dip of the ore. The incline is kept just beneath the mineral, and at times is in the parting quartzite, and at others in lime. The result of stoping in this ore-body shows that in places the lime stratum beneath the intercalated has been entirely replaced by ore, and the mineral consequently rests directly on the parting quartzite. It is to be hoped that the proposed change of management will not subvert the plans of Mr. Booraem for the accumulation of a prospecting fund and the early exploration of the fault below the Star mines and the unopened territory owned by the company, to the westward of the fault.

Nisi Prius.—The shaft on the Weir and Guggenheim lease of the company is sinking again. Considerable ore was found at the present level, but the mineral was making into the limestone and greater depth became necessary to the successful operation of the property.

Prospect Mountain Region.—Several new shafts have lately been started on the north side of Big Evans Gulch, opposite Fryer Hill, and attention is again directed to Prospect Mountain as a possible new field for mining. The extension of the blue limestone contact through this region is undoubted, and has in some instances been proved up, though not to the satisfaction of the prospector. In every instance so far, only low-grade iron ore has been uncovered, and profitable ore still remains to be disclosed. The area, however, is large, and the work done limited and shallow. Along Little Evans Gulch, where the most work has been done, a fault crosses the country. This disturbance presents two distinct formations for the miner. On the west of this fault, the ore zone is depressed and covered by a great mass of porphyry, placing it beyond the reach of the poorer prospector. On the east side of the fault, the stratified rocks have been lifted up, and the porphyry capping the blue limestone removed, and the mineral plane also scored off, necessarily leaving a barren formation. As we advance up the mountain, the formation becomes more regular and complete; but there are also shafts sunk, and the contact has not been very generally opened. The Little Hannah, Uncle Sam, and one or two other properties have disclosed contact veins with some low-grade mineral in quantity, and it would appear that further development might show pay ore. There is no known physical reason why ore-deposits should not have formed in the contact in this mountain, and a single good discovery would revive work over the entire area of this large mountain.

Robert E. Lee.—The pump, which gave away a few day ago, is again in good repair and sinking has been resumed. About twenty feet have been added to the depth of the shaft since work was started a month ago.

Of other localities, the *Herald-Democrat* says:

Grand View.—This Rico smelter, which recently closed down, and of which Mr. W. R. Boggs was superintendent, produced about 300 tons of bullion while in operation. It started up June 17th.

Red Cliff Mines.—The shipments during the past week (date of writing, September 28th) amounted to twenty-two cars, divided among the different mines as follows: Iron Mask, 3; Crown Point, 2; Alps, 1; Accidental, 3; Blake, 1; Ben Butler, 2; Kingfisher, 2; First Chance, 1; Eureka, 2; Harrington, 1; Bleak House, 4. The bulk of the above shipments were from the quartzite mines, and the mineral probably of high grade.

The bonanza mine of Red Cliff, the Iron Mask, will begin shipping over a hundred tons a day with the close of the week. The new tramway connecting the mine with the railroad, when completed, will give uninterrupted shipments. The ore-house at the mine contains 300 tons awaiting the completion of the tramway. The mine, according to all reports, discloses an immense amount of ore—about 100,000 tons, which, according to Mr. Foster, State Inspector of Mines, are worth $3,482,000. At present, less than eighty men are working in the mine, but this force will be doubled in a fortnight.

The Warrior's Mark, in the cañon on the Battle Mountain slope, is owned by Messrs. Henslee, Sherwin, and Wilder, of Leadville, and the Wood Brothers. It is a narrow fissure in the granite, opening out occasionally, forming pockets or chimneys containing an argillaceous vein matter, running little in silver, but high in gold. In a lower tunnel now driving, the mineral has been changed to a sulphide, composed largely of pyrites. Seven car-loads shipped so far have returned $10,706. The last car brought $2563, having averaged 12·5 ounces in gold and 13·3 ounces in silver. Owing to the peculiar nature of the work done, the property can not be said to have any resources or ore in sight, and its future is altogether dependent on the continuance of the ore-channels hitherto productive.

PARK COUNTY.

Pennsylvania Placers.—The Fairplay *Flume* reports a late discovery, located as the Gopher, from which, a few days since, two nuggets, worth respectively $11 and $12 in gold, were found, besides numerous smaller ones. The gold is all in heavy flakes. The locators marketed nearly two pounds of gold recently, and it was of such remarkable fineness for placer gold that they got in the neighborhood of $26 an ounce for it, "so we have been told."

SAN JUAN COUNTY.

Blizzard.—A representative of the Silverton *Miner* recently visited this mine, the scene of the recent great carbonate strike at the head of Dry Gulch. The property is evidently a large one, and shows more ore for the amount of work done than any other mine in the district since the opening of the National Belle four years ago. The ore is found in caves similar to those of the last-mentioned property, in a formation of trachyte and spar. In sinking the winze, a cave several feet in diameter was broken into. The cave dipped away from the winze at an angle of 20 degrees, but was nevertheless followed. At a depth of 25 feet the cave flattened out and the shaft was continued down to a depth of 30 feet, and a drift following the trend of the ore started. At a point about twenty feet from the shaft, the cave began to open up into immense proportions, the extent of which can not be seen on account of the masses of ore it contains. Long bars of iron have been driven into the ore for over ten feet on each side, and no walls have been found. Fissures in the ore are also found that the new paper man held his candle in and could see down a number of feet, and a stone thrown into the crack could be heard rolling for some seconds. No work has been done in extracting any of the ore for shipment, and only one ton of the ore has been sent down this season. The ton yielded 52 ounces silver and some gold. The Blizzard is about two miles and a half from the Cement Creek wagon-road and about eight miles from town.

DAKOTA.

Buxton.—The *Black Hills Pioneer* says that on the 26th ult. this company received 1700 ore-sacks, and shipped on the 27th ult. 20 tons of ore to Omaha, and was to ship forty tons more in a day or two. The superintendent says that shipping ore to the Omaha smelters is the best way to make money in this country, as the shipper knows just what his returns will be every time. The thousands of dollars expended in the erection of mills for the reduction of the rebellious ores in the Bald Mountain and other districts have been a detriment to the mineral industry of the Hills, as they are now standing in every direction, monuments of failures, whereas, if one quarter of the money had been employed in transporting these ores to the Omaha reduction-works, this section of the hills would to-day be vastly more wealthy and greatly more developed.

Caledonia.—For the week ended September 27th, the superintendent reports ore produced from the cave, 200-foot level, 683 tons; from the old workings, 300-foot level, 751 tons; total, 1434 tons. The shaft advanced 8 feet from the bottom of the 425-foot level, and work on it may have to be discontinued temporarily on account of inadequate pumping capacity; but as soon as the new pump arrives, sinkin will be resumed.

Cambria.—The Lead City *Daily Tribune* says that this mine, on the divide between Nevada Gulch and Fantail Gulch, near Bald Mountain, is extensively developed by a system of cuts and tunnels. Assays return from $30 to $120 a ton. Forty tons of fine ore are on the dump.

Retriever.—One cut on the north end of the claim shows a large body of ore. Forty tons are on the dump. Farther south, a succession of cuts exposes a continuous ore-body for several hundred feet. The workmen are uncovering an ore-body that has been developed by two shafts, and which averages about $50 to the ton. This mine is located in nearly the same position with the Cambria.

IDAHO.

The *Wood River News-Miner* says: If Wood River ore did not carry a high percentage of lead, mining would receive a severe check by the fall in silver. The lead added to the silver enables nearly all our mines to be profitably worked even now.

Ajax.—A shipment of ore assaying 155 ounces to the ton was lately reported to the *Wood River News-Miner*.

Columbia.—This mill is having a good run, and has already sent out three bars of bullion.

Minnie Moore.—The mine ships regularly two car-loads of ore a day.

Parnell.—The ore from this Germania Basin mine is packed to Galena, and then shipped to the smelter at Ketchum. It comes over the new road, which is already beginning to be of great business importance. Last winter, a tunnel was run in on the Parnell ledge 125 feet. Large bodies of ore were encountered in the crevices of the rock, and some of the blocks would weigh over 100 pounds. Fifteen tons of ore were shipped last summer that averaged $200 a ton. From 40 to 50 tons were to be shipped within a few days.

Senate.—The jig at Galena, doing custom work for this company, obtained concentrates carrying 70 per cent of lead and 80 ounces of silver. The mine is producing a large quantity of second-class ore, which will be jigged at the old smelter site. Assessment-work has been pushed vigorously on the various claims about Galena.

Tyrolese.—This mine, about a mile from the Parnell, has shipped 12 tons carrying 60 per cent of lead and 123 ounces of silver.

Wellington.—The jig at Galena for the past six weeks has been running on ore from the dump of this mine, the shipments resulting having been 15 tons of concentrates, which brought about $600.

MICHIGAN.

IRON MINES.

The following statement, given by the Marquette *Mining Journal*, shows the amount of iron ore shipped from the ports of the districts given below, for the season of 1886, up to and including Wednesday, September 29th:

	Tons.
Marquette—Marquette District	684,775
St. Ignace— " "	55,247
Escanaba— " "	473,704
Menominee District	677,412
Grand total of lake shipments	1,891,238

Shipments of Pig-Iron.

Pioneer furnace	5,080
Deer Lake furnace	925
Vulcan	9,369
	15,374

MINNESOTA.

ST. LOUIS COUNTY.

Minnesota Iron Company.—During the season of 1886, including the week ended September 29th, there were shipped from Two Harbors 243,808 tons of ore from this company's mines.

MONTANA.

The Helena *Herald* of September 30th has the following:

The United States Assay-Office at Helena melted to-day another $13,000 gold brick for the Drum Lummon Mining Company, the result of some selected ore from that famous mine. Two more gold bricks were stamped to-day by the same office for Mr. McNutt, of Salmon River, Idaho, who sent his gold-dust through the Merchants' National Bank of Helena to be melted. The two bricks of Mr. McNutt run 950 fine, and have a commercial value of $12,000.

The Montana Railroad Company has ordered the

immediate construction of the road from the Anaconda mine, at Butte, to Walkerville.

D. P. Newcomb, of the Northern Pacific Express Company, says that the Cœur d'Alene branch deflecting from Hauser Junction, about thirty miles this side of Spokane Falls, is already built to Cœur d'Alene City, about half-way to Wardner, its objective point. The rest of the way it will be a narrow gauge. The line, when completed, will be seventy-five miles long. Mr. Newcomb says: We are going to have a second Virginia City out there. Those leads at Wardner are wondrous for both size and richness of ore. The placers of the district, too, are showing up in fine style. We carry out of the country from $10,000 to $15,000 a week in gold-dust.

The Stillwater District, south of the old Crow Agency, on the Upper Stillwater River, in Gallatin County, is bound soon to become one of the principal copper and silver producing districts of the country. Two Eastern corporations, the Minneapolis and Stillwater mining companies, are the principal owners of these mines, and are doing considerable development-work. Avalanche Creek, cutting through one of these leads, shows immense deposits of copper ore.

Empire.—The new and important ore strike in the Empire mine is at a depth of 425 feet from the surface, and 125 feet below the workings hitherto prosecuted. At 120 feet, the lower tunnel has penetrated an ore measurement of four feet, without as yet striking the outer wall. The find is most important, not only in the size of the ore-body but in its richness.

Montana.—The report shows a net balance for the half year of £83,035, out of which two interim dividends at the average rate of 20 per cent a year have been paid, and £6600 have been carried to a reserve fund, leaving a balance of £10,435 to be carried forward.

Moulton.—Incendiary fires destroyed 4000 cords of wood, the property of the company, in Brown's Gulch, Silver Bow County, on the 28th ult. The loss is estimated at $10,000. On the 28th ult., the company shipped $11,000.

Northern Butte.—This mine has been bonded to S. M. Walker, for $50,000. The mine is northwest of Walkerville, and north of the Wabash, and is bounded on the east by the Black Brothers.

Rapid Transit Mining and Milling Company.—This has been organized and is developing its mines near Marysville. It owns and works three promising leads, the Silver Bell, Occident, and Bell. The situation, opposite the Cruse Mountain and in the line of the Drum Lummon veins, is favorable to future development, and present indications are encouraging.

OREGON.

BAKER COUNTY.

Prof. J. E. Clayton, of Salt Lake City, who has recently made an examination of the mineral resources of this section, says: This extensive range of gold-bearing country has a general trend southwest and northwest. It is from 130 to 140 miles in length by forty miles in width, and is one of the most promising gold-bearing belts anywhere in the West outside of the old California gold belts.

Baker City, situated near the center of this gold region, on the line of the Oregon River and Navigation Company's branch line, and some forty or fifty miles northwest from Huntington, is the natural center for business and depot for supplies. The major portion of the auriferous region is covered with lava-beds of an unknown depth. Wherever the metamorphic rocks crop out, they are gold-bearing. The whole country is essentially gold-bearing, and the precious metal is found wherever the mountains rear their heads above the lava-beds. In the Blue Mountains, there is an old river-bed traced some twenty or thirty miles in length, which is covered with lava and volcanic ashes. Wherever, by denudation or erosion, this lava-bed has been cut into and the bed of this ancient waterway is exposed, rich placer diggings have been found. This river-bed is similar in character to the old river-beds in Plumas, Sierra, and Tuolumne counties in the great auriferous region of California. These old river channels are not only identical in character with those found in the Golden State, but the magnesium, serpentine, and hornblende slates are also identical. Evidently the Baker County region is simply a northern extension of those of California.

At the Winterville and Parker diggings, which are on the head-waters of Burnt River, some six miles northwest of Parker station, on the Cañon City road, and forty miles west of Baker City, very rich placers have been found. These are on some of the higher benches of the river-bed I have alluded to; but the bottom of the river-bed has never as yet been reached. In attempting this, a shaft 200 feet in depth has been sunk in this vicinity; but its projectors, through lack of proper appliances, were unable to control the water-flow, and so were compelled to abandon the project. But every bench or flat offset met with in sinking the shaft was rich with gold.

Farther northeast, on one of the head ravines of Powder River, at a place called Gimlet Gulch, is a point where the erosion has probably cut deeper into the river-channel than in any ravine on the range. Here a great deal of heavy gold has been extracted since 1864. The largest nugget was worth $3237. Many smaller nuggets were found, ranging from an ounce to $1000.

If it is found practicable to tap the bottom of the ancient river channel, there will no doubt be discovered the richest gold deposit in the West. All that is required is capital, energy, and a little good engineering to bring forth incalculable treasure.

The gravel bed in the river ranges from 20 to 300 feet in depth and carries gold all the way down to bed-rock.

On a line with the summit of the Blue Mountain, the river channel crops out on either side. Hitherto, the water supply has been limited to that supplied by the melting of the snow in spring, but there is a water supply at Olive Lake amounting to 5000 miner's inches. It could be taken out at the west side of the summit through a gap to the east side and conveyed along the old river channel for twenty-five miles. This is a ditch enterprise that could be inaugurated at a moderate expenditure, and no doubt would be one of the best gravel mining enterprises in the West.

The bed-rock channel would have to be reached mainly by long drain tunnels through the rim rock, or by sinking shafts and putting in powerful pumps to get rid of the water.

On each flank of the old river channel, deep cañons have been cut into the country, running east, into the Powder and Burnt rivers, and west into John Day's. In every instance where the lava overflows have been cut through, metamorphic slate, granite, syenite, and greenstone formations have been exposed.

Rich placers have been found along the beds of these side cañons and creeks, also considerable gold-bearing quartz and boulders of rich float quartz. Also gold-bearing quartz ledges in the hills near by. Many of these show better ore than, and as promising lodes as, the gold-bearing quartz veins of California and other placers in the West in the same stage of development.

This rich belt of gold-bearing country extends from the north fork of Powder River southwest, a distance of eighty miles, with a breadth of from twenty to forty miles. It then extends northeast from Baker City into Union County, including the Eagle Mountain range, Pine Creek, and other locations, for about fifty or sixty miles and thirty or forty miles in width.

Hitherto, this extensive range of gold-bearing country has been worked in a primitive way, almost exclusively for the placer gold found. In the past two or three years, however, more attention has been given to searching for gold quartz veins. In this way, many valuable discoveries have been located, which now only await the advent of capital and machinery to develop them. While there are many quartz discoveries that are valueless, beyond a few bunches of rich rock, there are a few very promising quartz gold locations that show every surface indication of being permanent and paying mines.

While there are a few lodes that may be properly classed as bearing free gold quartz, such as the Connor Creek, Cleveland, and other lodes of that class, still a very large proportion of them so far discovered are heavily charged with pyrites of iron and copper mixed with zinc-blende. The surface, or the decomposed portion, is easily worked by the ordinary process; but as soon as water is reached, and the base metals predominate, arrastras and other free-gold processes are no longer efficient for the extraction of the gold. Hence, improved methods are necessary in working these rebellious ores. The Cornish rolls and good concentrators are evidently the most efficient method of extracting the values from this class of sulphureted ores.

Some of the veins in the Blue Mountain range are rich in silver as well as gold. The coming method for the efficient working of this class of ore is unquestionably the improved Cornish roll and the best known system of concentration. While stamps are the most efficient for extracting gold from the oxidized portion of the lode, they are not suited to the sulphureted ores, for the reason that they crush too much of it into fine slimes, thus making the concentration of the valuable portion exceedingly difficult. Hence the improved Cornish rolls are the best for crushing sulphureted ores, because they granulate the quartz and sulphurets down to fine sands with a smaller residue of fine slimes than any other machine known.

SOUTH AMERICA.

VENEZUELA.

El Callao.—Messrs. Baring Brothers & Co. have received an official telegram from Cuidad Bolivar, stating the product for the first fortnight of September to have been 23,750 ounces of amalgam. Assuming 43 per cent as the ratio of gold to amalgam, this means a yield of about 10,200 ounces of bar gold; for the year 1885, the ratio of standard ounces to amalgam was about 47 per cent, which would indicate a yield of about 11,000 standard ounces for the two weeks, being a considerably larger amount than the mine has ever before produced for a half month.

SOUTH CAROLINA.

Paul C. Trenholm, of Charleston, has just issued a tabulated statement showing the shipments of phosphate rock from September 1st, 1885, to August 30th, 1886, from which it appears that 458,990 tons reached Charleston and Beaufort for the year, a portion being consumed at those places, the remainder being shipped. The consumption by the fertilizer companies in South Carolina was 69,000 tons. The coastwise shipments amounted to 187,888 tons, and the foreign shipments to 161,106 tons. At an average value of $4 a ton, the rock mined during the past year amounted to $1,835,960. The reports of the special phosphate assistant show that the companies working under grants from the State mined for the month of July 25,889 tons, upon which the State has received a royalty of $26,729.64. The phosphate industry alone is worth many millions to the commerce of Charleston.

BULLION PRODUCTION FOR 1886—SPECIAL OFFICIAL REPORTS.

Mines.	States.	Month of August.	Year from Jan. 1st, 1886.
		$	$
Alice, G. S	Mont.	**103,149	771,243
Belmont	Nev.	——	3,255
Boston & Montana, G.	Mont.	24,552	417,137
Caledonia, G.	Dak.	.....	118,112
Christy, S.	Utah.	24,800	190,161
Chrysolite, S.	Colo.	**20,384	157,029
Colorado Central, S.	Colo.	20,517	183,712
Daly, S.	Utah.	100,534	490,179
Deadwood-Terra, G.	Dak.	.....	270,869
Derbec Blue Grav., G. S.	Cal.	14,426	123,768
Elkhorn, G. S.	Mont.	.....	120,889
Eureka, S. L.	Nev.	——	147,559
Father de Smet, G.	Dak.	——	61,376
Freeland, G. S. C.	Colo.	25,188	207,077
German Consolidated, G.	Colo.	.....	53,673
Granite Mountain, S.	Mont.	.....	839,000
Head Center Cons., S.	Ariz.	——	4,633
Head Center & Tranq., S.	Ariz.	——	25,818
Hecla, G. S. L. C.	Mont.	.....	251,303
Helena, G. S. L. C.	Mont.	.....	240,234
Holmes, S.	Nev.	79,885	403,521
Homestake, G.	Dak.	.....	581,305
Hope, S.	Mont.	9,844	102,456
Independence, S.	Nev.	——	15,000
Iron Hill, S.	Dak.	**49,356	299,450
Iron Silver, S. G.	Colo.	.....	398,681
J. D. Reymert, S.	Ariz.	418	2,402
Kentuck, S.	Nev.	——	*2,215
Lexington, G. S.	Mont.	53,643	607,729
Montana Limited, G. S.	Mont.	127,300	1,062,200
Moulton, G. S.	Mont.	66,911	514,996
Navajo, G. S.	Nev.	39,448	101,586
New Pittsburg, S.	Colo.	——	5,230
North Belle Isle, G. S.	Nev.	8,307	8,307
Ontario, S.	Utah.	.....	769,416
Plymouth Consolidated, G.	Cal.	.....	255,473
Plutus, G. L. C.	Colo.	6,597	121,404
Ropes, G. S.	Mich.	3,888	25,835
Standard Consolidated, G.	Cal.	21,276	138,041
Tombstone, G. S. L.	Ariz.	† ——	**423,307
Total		.....	$10,512,326

G., gold; S., silver; L., lead; C., copper; M., mica. Silver valued by the different companies from $1@$1.29 per ounce; gold, $20.67. †Not including value of lead and copper. ** Silver valued at $1.29. * Royalty. ‡ Net. § Ore sales. ‖ Not official. —— No shipments during month mentioned.

UTAH.

For the eight months of the present year, excluding all ores, the receipts of bullion in Salt Lake City have been as follows: January, $328,852.66; February, $456,024.03; March, $469,722.63; April, $519,666.08; May, $387,891.49; June, $527,036.97; July, $586,644.38; August, $480,141.49; total, $3,755,029.73.

WYOMING.

The *Wyoming Tribune* says: Although the Penn Mining Company (Seminoe District) the principal operator in this district, has closed down its mill for the season, tunneling and work in the shafts continues, and by spring more ore will be on the dump than can be disposed of without the aid of additional machinery. This company recently struck a gold-bearing six-foot vein, and the corporation will probably erect another stamp-mill next year.

Hanley & Firth, placer miners, are working a claim that produces thirty cents to the pan, and promises to do even better when fully developed.

MARKETS.

NEW YORK, Friday Evening, Oct. 8.

Silver.

DATE.	London. Pence.	N. Y. Cents.	DATE.	London. Pence.	N. Y. Cents.
Oct. 2..	44½	96⅝	Oct. 6	44⅝	96¾
4..	44½	96⅝	7	44 11-16	96⅞
5..	44½	96⅞	8	44 11-16	96¾

The market presents no new features, and continues steady.

The Carson Mint to be Reopened.—Acting Secretary Fairchild has authorized the reopening of the Mint at Carson City as an assay-office for the receipt of deposits of bullion. This action was taken on the recommendation of the Director of the Mint, and with the full approval of the President. This is intended as an experiment, as it is said at the department that it is is doubtful whether the deposits at the mint will warrant its use as an assay-office. Its future operation as a coinage mint will depend altogether upon the extent of its deposits.

The New Silver Certificates.—The general distribution of the new one dollar silver certificates began at Washington, October 4th, and will be continued until the demand, which is very great, has been entirely supplied. The notes are now printed at the rate of $80,000 a day. The new two dollar silver certificate will not be ready for issue for two weeks yet.

Standard Dollars.—The issue of standard silver dollars from the Mints during the week ended October 2d was $840,148. The issue during the corresponding period of last year was $621,120. The shipments of fractional silver coin during the month of September was $1,155,197. A statement prepared at the Treasury Department, Washington, October 5th, shows that there are now outstanding $60,139,952 in standard silver dollars, being the largest amount of that coin in circulation since their issue began.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 3½ per cent. During the week, the bank lost £646,000 bullion; and the proportion of its reserve to its liabilities was reduced from 41 to 33 5-16 per cent, against 33 per cent at the same time last year. The weekly statement of the Bank of France shows a gain of 13,525,000 francs gold and a loss of 1,450,000 francs silver.

Copper.—This market is exceedingly strong, and prices are advancing. Manufacturers are not in the market yet to any extent, but we hear of sales of 25,000 pounds at 11·40 cents, and the price then went up to 4·60c. It appears to be generally conceded that the next Lake sales will not be below 12 cents, and "12½ cents before the end of the year" is freely talked, and bets are made on it by some who are usually correct in their forecasts.

The English market has at last felt the effect of our light shipments and probable discontinuance of them altogether; for Chili Bars have advanced to-day to £42 7s. 6d. It is probable that the better feeling in business that is reported from every part of Europe will stimulate consumption and speculation, and considerably higher figures may reasonably be expected; £45 would not surprise many who are familiar with the trade. Best Selected has advanced £1 to £45. We hear of sales of 900 tons of Anaconda matte in London at 8s. 6d. Mr. S. Raunheim furnishes us the following statistics. Our exports for the month of September were as follows:

	September, 1886.	September, 1885.
Ingots	2,088,056 lbs.	4,205,108 lbs.
Matte	1,558 tons.	1,903 tons.

Total decrease in pounds of fine in September, 2,542,092 pounds.

The shipments of matte in October will be quite insignificant.

The shipments of ingot in September were made up of:

	Pounds.
Orford	427 894
Lake	1,430,082
Parrot	230,080
Total	2,088,056

During the first *nine* months, our exports have been as follows:

	1886.	1885.
Ingots, bar and old	13,143,083 lbs.	30,288,527 lbs.
Mattes, ores, etc	20,268 tons.	26,757 tons.

Decrease in pounds of fine copper:

Ingots, etc	17,145,444
Mattes (6489 tons)	7,994,448
	25,139,892

The market on this side is in an extremely strong condition, and it may, if continued a few months, bring the foreign market up to such a healthy tone as will insure a good market throughout the coming year.

We do not hear of any other Western mines recently closed even talking of going to work. The Butte *Inter-Mountain* is amusing its readers by such sensational statements as this: "Mr. Haggin made two million dollars recently in Chili Bars in London." As at the time the rise in Chili Bars had been about £1 a ton in three months, Mr. Haggin must have bought and sold about 420,000 tons, or say twice the annual production of the entire world, or seven times the entire annual production of Chili. This is a fair average sample of the accuracy of our contemporary's statements.

We quote Lake Copper, 11½c.; Orford and Baltimore, 10¼@10⅜c.

The "mountain of copper," near Sudbury, in Ontario, certified to by Sir George Stevens, loses its importance as we hear more about it. We understand that it is a large body of pyrrhotite, carrying stringers of copper pyrites through it. We have seen some of the ore, selected specimens of which carry from 8 to 13 per cent of copper. No silver or gold was found in it, though claims have been made that it contained these metals in large quantity. The copper is not abundant in the ore, and as the magnetic iron pyrites are worthless for the production of acid, the "mountain" is likely again to bring forth very insignificant offspring after its labor.

Tin.—The tin market has fallen off, and is quoted at the close of business to-day in London £101 5s. for spot and £102 for three months. It is noticed, as somewhat strange that, whenever London quotations here go up, a house here, supposed to be connected with Straus in London, sells largely, and *vice versa*. We quote here at 22·15@22¼c. for spot.

Lead.—This metal has again receded, as forecast in our report a week ago, and it is now greatly demoralized. Manufacturers who bought at high prices are disgusted at the drop, and will buy only for immediate necessities, fearing still lower prices.

Sales have been made at 4·40c., as announced in our last, and it is said that 4⅜c. has been taken, but the lower figures of 4·35c. and even 4·30c., which some of the trade papers have reported, we have been unable to verify and do not credit.

Total sales have been moderate, aggregating perhaps 300 tons. The market is undoubtedly very weak, and may even decline further; but the more encouraging tone of foreign markets generally may at any time create an advance there that would help our market.

London quotes Spanish Lead to-day, £12 17s. 6d.; and English, £13 2s. 6d. English freights are strong at £7 6s.

Western lead is offered for November and December at 4·37½c., and we understand some spot can be bought below this price, though no sales have actually been made at less than 4⅜c. We quote 4·35@4⅜c.

Messrs. John Wahl & Co., of St. Louis, telegraph as follows to-day:

Market very dull, and prices have further declined. It is rumored that sales have been made as low as 4·20c. Buyers are very scarce, and have no confidence in values. Sales for the week sum up about 300 tons at prices ranging from 4·27½@4·20c.

Messrs. Everett & Post, of Chicago, telegraph as follows to-day:

The market is very dull and there is no demand. Buyers are few, and, expecting a further decline, buy only for immediate wants. Prices are nominally based at 4·35c., but there is no business to test actual market.

Manufactures.—We quote Lead Pipe 6½c., less the usual discount, making the net price perhaps 4⅛c. to jobbers, and 5c. to plumbers. Sheet is worth 7½c., less the discount of 20 per cent.

Shot, $1.60@$1.85 per 25-pound bag. Dry White Lead, 5·97@6c. net.

Spelter.—This market is, as usual, very dull. M. & H. sells at 4·30c., and prime Western brands 4·35@4·45c.

New Jersey Spelter has been advanced, and is quoted at 6½@7c.

New Jersey Zinc Oxide, 4@4½c., according to grade.

Antimony.—We quote Cookson's at 9@9½c. Hallett's has remained at from 7½@7¾c. It continues to be quoted in London at £30.

Nickel.—We quote 60@63c.

Bismuth—Is quoted at $2@$2.25 a pound.

Aluminium—Is quoted at $1 an ounce.

SUPPLEMENT TO THE NEW YORK METAL EXCHANGE MARKET REPORT.

Movement of Bonded Metals, Port of New York, September, 1886.

METALS.	Imports. Aug., 1886. Total.	Imports. Sept., 1886 Total.	Withdrawn. Sept., 1886.
Iron ore	7,326 tons	4,652 tons	....
Pig-iron	9,443 "	12,105 "	130 tons
Spiegel iron	9 860 "	8 468 "	....
Old rails	....	....	....
Scrap iron	724 tons	403 tons	....
Scrap steel	1,34? "	1 065 "	20 tons
Steel bl'ms and billets	2,037 "	7,629 "	75 "
New steel rails	....	....	....
New iron rails	....	....	....
Wire and nail rods	4,632 tons	9,288 tons	602 tons
Iron bars, etc	1 127 "		
Iron beams	96 "	97 "	....
Sheet-iron	113 "	128 "	420 tons
Steel sheets	....	795 "	....
Cotton ties	150 tons	362 "	38 tons
Russia sheet-iron	....	....	....
Steel tires and f'rg'gs	15 tons	48 tons	....
Steel hoops	192 "	25 "	....
Steel bars, etc	1,755 "	1,303 "	....
Tin plates	105,752 bxs.	124,013 bxs.	7,169 bxs.
T.ggers' iron	1,600 "	1,154 "	....
Pig tin	1,292 tons	938 "	....
Copper ore	....	....	....
Copper matte	....	....	....
Ingot copper	....	....	....
Copper (old)	675 lbs.	111 lbs.	....
Brass (old)	....	....	....
Pig-lead	603 tons	1,025 tons	56 tons
Lead (old)	....	....	....
Spelter	188 tons	306 tons	77 tons
Sheet zinc	575 lbs.	115 "	....
Scrap zinc	43,740 "	44,176 lbs.	....
Reg. antimony	419 cks.	323 cks.	....
Nickel	21,500 lbs	24,900 lbs.	4,500 lbs.
Type metal	44 tons	102 tons	....

METALS.	Exports, Aug., 1886.	Stocks, Oct. 1, 1886.
Iron ore	....	....
Pig-iron	110½ tons	2,348 tons
Spiegel iron	....	1,206 "
Old rails	....	3,780 "
Scrap iron	....	2,756 "
Scrap steel	....	195 "
Steel blooms and billets	....	....
New steel rails	14 tons	1°5 tons
New iron rails	....	12 "
Wire and nail rods	93½ tons	9,548 "
Iron bars, etc		
Iron beams	....	....
Sheet-iron	....	16 tons
Steel sheets	....	....
Cotton ties	....	554 tons
Russia sheet-iron	....	619 "
Steel tires and forgings	....	62 "
Steel hoops	....	....
Steel bars, etc	1 ton	118 tons
Tin plates	....	49,593 bxs.
Taggers' iron	....	(No record.)
Pig-tin	....	....
Copper ore	2,563 tons	....
Copper matte		....
Ingot copper	1,744,320 lbs.	....
Copper (old)	....	66,800 lbs.
Brass (old)	....	11,561 "
Pig-lead	....	1,971 tons
Lead (old)	....	498 lbs.
Spelter	....	70 tons
Sheet zinc	....	11 "
Scrap zinc	....	13,400 lbs.
Reg. antimony	....	111 cks.
Nickel	....	3,912 lbs.
Type metal	....	....

The German Chloride of Potash Trade.—A Stassfurt report in *Kuhlow's* states that the production of the chloride of potash-works of that district amounts—according to the consignments of the first half-year and the returns of the second half-year of 1886—to 1,937,993 centners, and the stocks on January 1st being 103,737 centners, the total amount at disposal for this year is 2,041,730 centners. Up to August 31st, no less than 1,934,237 centners had been sold, the remainder being 107,493 centners. As, however, a stock of 100,000 centners must be kept, only 7500 centners will be disposable for the remainder of the year, unless the present rate of production be increased, as it probably will be.

The Potash Industry.—A Magdeburg correspondent of *Kuhlow's* writes that the syndicate of the potash works will shortly fix the price of carnallit for 1887, and after that, the works will fix the price of chloride of potash. Probably both prices will be as at present, though many advocate a small increase. The consignments are larger at present, as deferred orders for America are executing, and they would be still more extensive were not the Elbe so low.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Oct. 8.

American Pig.—The market is very strong, and it is difficult if not impossible to get No. 1 Foundry of standard brands at less than $19. All the talk and all the indications point toward somewhat higher figures for next year's contracts. There is a great scarcity of good foundry irons, notwithstanding the large make.

We quote standard Lehigh brands, tide-water delivery: No. 1 X, Foundry, $19@$19.50; No. 2 X, Foundry, $18@$18.50; Gray Forge, $16.50@$17.50; while less popular brands sell 50 cents below these figures, and fancy brands, such as Chickies, Sheridan, McKees, and others, sell at $20.50.

Scotch Pig.—The market is firm, and prices still have an upward tendency, following the advance in Glasgow and higher freights. We quote: Coltness, $21.50@$22; Gartsherrie, $20.50; Summerlee, $20.75@$21; Dalmellington, $19.25; Langloan, $20@$20.50; Clyde, $19.50@$19.75; Glengarnock, $19@$19.50 nominal; Eglinton, $18.50. Cables to the Metal Exchange to-day quote: Coltness, 51s.; Langloan, 46s.; Summerlee, 48s.; Gartsherrie, 46s.; Glengarnock, 43s.; Dalmellington, 42s. 6d.; Eglinton, 41s. 6d.; Warrants, 41s. 5d.; Middlesboro', No. 3, 31s. Freights are 7s. 6d.

Bessemer Pig.—Domestic Pig is quoted at $19@$19.50 at the furnace, and Foreign, ex ship, $20, nominal.

Spiegeleisen.—We quote English, $26@$26.25, and German, $25.25 for 20 per cent.

Structural Iron and Steel.—There is a good demand. We quote: Angles, 2·10@2·25c. delivered; Tees, 2·50@2·55c.; Iron Beams and Channels, 3c. base, for American; Steel Angles, 2·40@2·50c.

Steel Rails.—Prices are simply nominal at $35, at Eastern mills; it is difficult to place an order for early delivery. We hear of contracts having been made for next year's delivery that for three mills will aggregate from 75,000 to 80,000 tons. We also hear that some of the mills are offering to make contracts at this year's prices for next year's deliveries; nevertheless, the prices next year will depend on the foreign market.

We hear of sales of 10,000 tons of English rails, and we hear of other orders that would go abroad could prompt delivery be secured. Freights are higher, and some of the English makers have advanced quotations 7s. 6d. on this account, and because of the rise in prices.

Steel Plates.—The market is firm and a fair business doing. We quote for Tank, 2·60@2·70c.; for Boiler and Ship Plates, 3@3¼c.; for Flanges, 3½c.; for Extra Flange and Fire-Box Plate, 4@4½c.

Steel Blooms and Billets.—We quote Blooms, $27 for foreign. We quote $27.50@$28.50, according to size and quality.

Merchant Steel.—Our quotations remain as follows: American Tool Steel, 7½@10c.; special qualities, 11@20c.; Crucible Machinery, 4@4·50c.; Bessemer and Open-Hearth Machinery, 2½c.

Plate Iron.—Common Tank, 2@2¼c.; Refined, 2¼@2⅝c.; Flange Iron, 3¼@3½c.; Extra Flange, 4@4·25c.

Rail Fastenings.—We quote Spikes, 2·25@2·35c. a pound; and 1¼@2c. for Angle Fish-Bars; 2·50@3c. for Bolts and Nuts. Sales in the East are reported 1·75c. for a large lot of fish-bars.

Bar Iron.—The market is firm and demand good. We quote: Refined at 1·70@1·90c.; Common, 1·60@1·70c. Store prices are ·10@·20c. higher.

Cast-Iron Pipe.—We quote $32.50 a ton for 4-inch pipe; $31.50 for 6-inch; and $28.50 for 48-inch, at the foundry.

Old Rails—Are quite firm and scarce at an advance. We hear of sales at $22, and $22.50 is asked for Ts, and $23 for Double-Heads.

Scrap.—The market is firm. We hear of some sales. We quote $20@$20.50 for Wrought, and $13@$14 for Cast.

Philadelphia. Oct. 8.

[From our Special Correspondent]

Throughout the entire State, a general demand is kept up for foundry and forge irons that keeps prices strong. Large orders to run for months in some cases are heard of from day to day. Nearly every furnace is sold up, but a few companies have shut down on remote delivery contracts. Still buyers have been wise and have made themselves safe. Forge can be had all the way below $15.50@$17. Considerable No. 1 Foundry has been ordered at a price equal to $19.

Foreign Material.—Yesterday, 6773 steel slabs arrived, besides liberal receipts through the week of tin plate and metals. There is no business to report in Bessemer pig or steel bloom, though there is inquiry and abundance of business within reach when foreign quotations drop to our views.

Muck-Bars.—Muck-Bars are quiet, as prices are a little above buyers' notions, and all mills are oversold.

Blooms.—A moderate business is done.

Merchant Iron.—The heavy demand noted continues in all city and country mills, and prices are of course firm. No concessions are asked, and some late buyers are about out of iron and find the mills all sold up on them. As to the talk of an advance, it is probable that November buyers will find it necessary to pay more. To-day's quotations are $1.90@$1.80 at mill.

Nails.—A moderate demand only is reported, except from country buyers, who are doing better than usual.

Plate and Tank.—The mills around Harrisburg seem loaded up with a great deal of fall and some winter business, and the heavy buyers are expected in the market soon with more specifications for boat, car, and other common and plate material. Tank is 2·15@2·20c.; Plate, 2@2·10c.

Sheet-Iron.—The mills are busy, and card rates easily obtained on the steady trade coming.

Structural Iron.—The mills have as much in hand or guaranteed as they can do this year, though some of the orders can lie over, and will, if the small orders for prompt delivery come in as is anticipated. The demand will keep up. Angles, 2·10c.; Beam and Channels, 3c.

Steel Rails.—The often repeated statements again answer. The new business heard of this week is for spring delivery, but nothing unusually large has been heard of. A ten thousand ton order is floating around somewhere, but our mills do not expect it. There is quite an active demand for street-car rails, also mine rails. Standard Section Steel Rails are $34 for spring and $35 for midwinter.

Old Rails.—The week's business counts up large in foreign and domestic—between six and seven thousand tons in all ordered and changed hands. Prices are high, $21.75@$22.50.

Scrap.—The yards are practically bare of good scrap, and Selected is wanted for November at $20@$20.50 offered.

Pittsburg. Oct. 7.

[From our Special Correspondent.]

The firmness noted in our last has been maintained, and a further advance demanded. On most descriptions of iron, some dealers are not anxious to sell while others are disposed to sell right along. The Pittsburg iron market was never in a more healthy condition than at present. A strong steady demand in most branches is maintained for current wants. For good reasons, future requirements are not attracting much attention. The full production of furnaces and mills is absorbed without creating either scarcity or permitting accumulation. Buyers are watching the market very closely, however, and are ready to take advantage of the first signal of danger. In a word, a steadily improving market defines the position as developed during the past week. Notwithstanding the enormously large production, stocks are gradually diminishing. This, however, may be looked for at this season of the year. Competition from outside points has pretty much disappeared, and if a seller wants to sell out, he can do so by asking last week's prices. The concessions made during the summer months have been recovered, and prices now stand firmly at what, until recently, were merely nominal quotations.

Muck-Bar.—Very firm; little to be obtained at last week's figures.

Old Iron Rails.—Firm and much fancied; offerings small.

Nails.—Firm; prices tend upwards.

Pig-Iron.—Following are the current rates:

Coke or bituminous:	$	$
Foundry No. 1	17 50	@18.00
Foundry No. 2	16.00	@16 75
Gray F., No. 3	15.50	@16.00
" " No. 4	15.00	@15.25
White	14.75	@15.25
Mottled	15.25	@15.75
Silvery	15.50	@18.50
Bessemer	18.00	@18.75
Charcoal:		
Foundry No. 1	22.00	@23.00
Foundry No. 2	21.00	@22.00
Cold-Blast	24.00	@26.00
Warm-Blast	21.00	@24.00
20 p. c. Spiegel	28.00	@

	$	$
Muck-Bar	28.00	@30.00
Steel Blooms	32.00	@36.00
Steel Slabs	30.00	@33 00
Steel Crop Ends	22.50	@23.00
St'l Bl'm Ends	21.50	@22.00
Old Iron Rails	23.50	@24.50
Old Steel Rails	23 00	@23.50
No. 1 W. Scrap	17.50	@18.00
No. 2 W. Scrap	16 50	@17.00
Steel Rails	36.00	@36.50
" light sect's	37.00	@40.00
Bar Iron	1.70	@ 1.80
Iron Nails	2.05	@ 2.10
Steel Nails	2.05	@ 2.10

LATEST IRON SALES.

Coke and Coal Smelted Lake Ore.

1000 tons	Gray Forge	$15.75	4 mos.
500 "	White and Mottled	14.75	4 mos.
200 "	No. 1 Foundry, all ore	17.75	cash.
200 "	No. 1 Foundry, all ore	17.75	cash.
100 "	No. 1 Foundry, all ore	17.75	cash.
200 "	No. 1 Mill, all ore	16.65	cash.
100 "	No. 1 Foundry, all ore	17 50	cash.

Coke, Native Ore.

500 tons	Gray Forge	$15.75	4 mos.
40 "	Silvery	16.25	cash.
20 "	No. 1 Mill	15 75	cash.
100 "	Gray Forge	16.00	4 mos.
250 "	Gray Forge	16.50	4 mos.
100 "	No. 1 Foundry	17.00	cash.
25 "	No. 2 Foundry	16.50	cash.
20 "	Gray Forge	16.25	cash.

Muck Bar.

750 tons	Muck Bar	$28 25	cash.
1000 "	" "	28 00	cash.

Charcoal.

100 tons	No. 1 Foundry	$24.00	4 mos.
50 "	" "	22.50	cash.
50 "	No. 2 "	21.50	cash.

Old Iron Rails.

1000 tons	old Iron Rails	$24.50	cash

Crop Ends.

500 tons	Imported	$22.00	cash.

Louisville. Oct. 6.

[Reported by GEORGE H. HULL & Co.]

The market continues to show an improvement in tone of prices. Furnaces have sold actively, and in some cases are so far sold ahead that they are declining to sell for delivery this year, and for next year's delivery are holding at 50 cents a ton higher. Buyers here have not taken hold as vigorously as in some other sections. Many of them would book orders for future delivery at current prices, but are not willing to pay the additional price asked.

We quote for cash in round lots as below:

PIG-IRON.

Southern Coke, No. 1 Foundry	$16.50@$17.50
" " No. 2 "	15.50@ 16.50
Hanging Rock Coke, No. 1 Foundry	17.00@ 18.00
" " Charcoal, No. 1 Foundry	19.00@ 21.00
Southern Charcoal, No. 1 Foundry	17.00@ 19 00
Southern Coke, No. 1 Mill, Neutral	14.50@ 15.50
" " No. 2 " "	13 50@ 14 50
" Charcoal, No. 1 Mill	16.00@ 17.00
Southern Car-Wheel, Standard Brands	22.00@ 24.00
Hanging Rock, Cold-Blast	23.00@ 25.00
" " Warm-Blast	19.00@ 21.00

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 8.

Statistics.

Production of Coke on line of Pennsylvania RR. for week ended October 2d, and year from January 1st:

Tons of 2000 pounds.

	1886. Week.	1886. Year.	1885. Week.	1885. Year.
Allegheny Region	4,716	139,594	3,886	137,793
West Penn. RR	2,288	80,138	2,204	37,413
Southwest Penn. RR	57,184	1,964,164	30,269	1,361,579
Penn. & W. Region	6,259	245,293	5,212	176,607
Monongahela	2,813	106,356	1,948	71,591
Pittsburg Region	.....	15	.....	.....
Snow-Shoe	732	19,982	662	14,072
Total	73,992	2,555,542	44,241	1,799,055

Production Anthracite Coal for week ended October 2d, and year from January 1st:

TONS OF 2240 LBS.	1886.		1885.	
	Week.	Year.	Week.	Year.
P. & Read. RR. Co..	263,785	8,405,757	270,709	8 207.675
L. V. RR. Co.....	142,189	4,508,822	167.996	4,291,311
D. L. & W. RR. Co.	105 272	3,632,551	136,627	3,487,762
D., & H. Canal Co..	86,103	2.656,453	107,999	2,371 751
Penna. RR.....	48,318	2 315,903	53,039	2,382,728
Penna. Coal Co.....	34,708	1,000,162	39,494	989,950
Penna. Canal Co...	17,558	343,700	16,063	311,707
Total...	697,933	22,863.348	791,927	22,042,884
Increase..	... . ..	820.464	....	.....
Decrease.	93,994	....	....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1881.....20,422.349		1883.....22.997.226	
1882.....21,027,176		1884..... 22,454,828	

The Norfolk & Western Railroad Company reports shipments of Pocahontas Flat-Top coal for the week ended October 2d, 1886, and year from January 1st, as follows, tons of 2000 pounds: 1886, week, 20,319; year, 616,738; 1885, week, 14,874; year, 412,737. Increase, 1886, week, 5,445; increase, year. 204,001.

Production Bituminous Coal for week ended October 2d, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1886.		1885.	
	Week.	Year.	Week.	Year.
Phila. & Erie RR...	.....	7,864	72	21,231
*Cumberland, Md..	76,492	1,755,956	59,821	2,079,673
Barclay, Pa.....	3,102	141,999	4,116	179,547
*Broad Top, Pa.				
H. & Broad Top RR.	6,741	283,824	3,289	115,399
East Broad Top....	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe.....	2,781	78,469	3,863	108,058
Karthaus (Keating)	3,672	102,104	2.682	92,844
Tyrone & Clearfield	43,865	1,573,116	60,598	2,176,924
Alleghany Region, Pa.				
Gallitzin & Mountain.....	10,962	507,462	10,520	392,061
Total.....	147,615	4,450,794	144,961	5,165,737

* Tons of 2240 lbs.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.				
West Penn RR.....	6,282	244,528	3,435	168,164
SouthwestPenn.RR.	2,768	128,073	1,077	74,892
Pennsylvania RR...	7,475	205,204	5,808	161,847
Westmoreland Region, Pa.				
Pennsylvania RR...	32,720	889,134	27,473	803,510
Monongahela Region, Pa.				
Pennsylvania RR...	7,847	296,869	5,584	205,210
Total.....	57,092	1,763,808	43.377	1,413,613
Grand total.....	204.707	6,214,602	188,338	6,579,350

Anthracite.

The movement of this coal is very active, with prospects of a continued good demand throughout the remainder of the year. The indications are, that for the remaining three months of this year the output will equal 9,500,000 tons, and the companies will derive very satisfactory profits in conducting the business. There is a fair amount of coal selling at new prices, while there is practically none obtainable at less than net prices. During August, the average price received by the Delaware, Lackawanna & Western Railroad Company for all coal sold f.o.b. vessels at Hoboken was $2.98½ a ton. A considerable improvement is looked for in the September returns, while it is thought that for this month the average will reach $3.50 a ton. Up to the present time, a great deal of the coal that has been shipped has been sold long ago at low prices. It is now said that the old orders are largely delivered, and that hereafter the movement of coal will be to a very great extent at current prices.

On next Thursday, the general sales-agents will meet to discuss the condition of trade and the advisability of a further advance in prices. It is probable that no change will be made at that time, which we think would be a wise policy. The letter of Governor Pattison and the agitation of the question of an increase in wages by the miners will have some weight in preventing a further advance in the prices of coal at that meeting. We think an advance would be more healthy if made early next month, and after the demand for coal at current prices becomes sufficiently great to leave no question that it is justified. However, it is said that it is very probable that the Pennsylvania Coal Company will advance its prices next week, in which case the other companies will probably meet them.

Mr. Gowen expressed himself to a reporter of the Philadelphia *Inquirer* on Governor Pattison's letter as follows:

"I can not understand it. The governor seems to thind that Pennsylvania products should not bring good prices. We mine every year about 35,000,000 tons of anthracite coal in Pennsylvania, of which three quarters is sent to other parts. The commercial prosperity of Pennsylvania depends upon her ability to find steady markets at good prices for all her products. But the governor seems to think that it is better for Pennsylvania to dig out its valuable coal and give it to the other States for nothing. This confounds all my ideas of political economy. Again, there are probably 100,000 workingmen engaged in the coal traffic. The better the price of coal, the more they get for wages, and it is now too late to deny that good wages and prosperity go hand in hand. If the governor and the attorney-general get after these 100,000 men with their *quo warrantos* to compel them to reduce wages, there will be a pretty kettle of fish about election time in the coal regions. I hope Lieutenant-Governor Black will be about to see that the row is not laid to his door.

"The combination this year," said Mr. Gowen, "has been under the control of the receivers, and every body knows that the result of their combination has been to reduce prices, and their balance-sheet shows it. You see their idea of managing the trade was to restrict production and reduce prices. They have a cloud of lawyers advising them, and I suppose they had a legal opinion that combinations to advance prices were illegal. But they had heard that a combination in the coal trade was important, and so, in order to be on the safe side, they determined that their combination should reduce prices, and when the attorney-general gets after them, they can prove an alibi."

The whole matter is looked upon by the trade as a political movement, and not likely in any way to interfere with the workings of the coal trade. A much more serious view, however, is taken of the protests against the coal exchanges controlling the Western business.

The dangers of a general strike are all past for the moment. There may be some local disturbances that can in no way affect the entire trade.

We quote net prices per ton for ordinary free-burning coals, f.o.b. vessels, as follows:

	Week ended—		
	Oct. 8.	Oct. 1.	Sept. 24.
Lump.....	$3.40	$3.40	$3.35 . ...
Steamboat.....	3.40	3.40	3.35 .....
Broken.....	3.40	3.40	3.35 .....
Egg..	3.65	3.65	3 55 .....
Stove.....	4.00	4.00	3.85 .....
Chestnut.....	3.50	3.50	3.35@3.40
Pea.....	2.10@2.35	2.10@2.30	2.10@2.25
Buckwheat... ..	1.60@1.75	1.60@1.75	1.60@1 70
Dust.....	1.35	1.35	1.35 . .

Lehigh Pea is selling at $1.75@$1.85, and Buckwheat at $1.50.

Bituminous.

There is a fair demand, not an over-abundant supply of coal, a scarcity of cars, and still prices do not seem to improve. There are some very low prices reported in the market. Fair coals are worth about $3 alongside. The best of the Cumberland coals are selling at $3.25. Inferior coals are down to $2.70, and how much lower it is hard to say. There is a state of complete chaos in this trade. It is strange that there are not more energetic efforts made to bring about some order and to develop plans that will put this trade upon the profitable basis warranted by the improved condition of the industries that depend upon this coal for fuel.

Buffalo. Oct. 7.

[From our Special Correspondent].

The price of anthracite coal has been advanced 25 cents a ton, wholesale and retail, for all sizes except pea. The schedule is as follows:

	Gross ton free on board vessel at Buffalo.	Gross ton on cars at Buffalo and bridges.	Net ton. Retail, delivered Buffalo.
Grate..... .. ..a.	$4.95	$4.65	$4.75
Egg....	4.95	4.65	4.75
Stove.....	5.20	4.90	5.00
Chestnut.....	5.20	4.90	5.00
Pea.....	....	....	3.25

Bituminous is light, as only retail orders or small jobbing lots are called for. The question as to whether a retailer shall be allowed to order, receive, and pay for his coal at the *lowest rate* all through the year, or only from month to month at schedule figures, is now under discussion. The former system seems to be the prevalent mode of doing business.

Last Saturday, the Buffalo *Courier* expressed its sentiments thus: "The coal kings have advanced the price of fuel another 25 cents per gross ton of 2240 pounds, as a reminder to the poor that, as winter is near, when wages are scant, frugality is a good thing to practice. As coal is sold to the public at the short ton of 2000 pounds, it may be possible that the specification of the gross ton has been made with the view of conveying the idea that the kings want to be generous. If so, they are likely to be misunderstood."

The principal topic of conversation among the coal men of our city is the communication of the Governor of Pennsylvania relative to the "anthracite coal combination." Views differ on the subject, naturally; and of course, all the *pros* and *cons* that have been advanced in days gone by are rehabilitated with much gusto. It would take up too much of your valuable space to give even a synopsis of the conversation; but, as a dealer said, "What will the ENGINEERING AND MINING JOURNAL say about it?" [so say I.] Let us hear from the Empire City for a pointer! Personally, I have no doubt that the companies have been careful to work under their charters or agreements; but what is the opinion of individual among so many?

Bituminous coal is in good demand, with supply limited in consequence of the continued scarcity of cars; no change in quotations.

Coke is fairly active and steady.

Officials of the Lehigh Valley Railroad Company from New York and Buffalo made a trip to the Northwest a few days since. As the result of the outlook presented, the company has decided to endeavor to purchase land at Rice's Point, a short distance from the harbor of Duluth, Minn., for dockage purposes, to accommodate its present and prospective coal and iron trade. If this can be accomplished, the work will be commenced and hurried to completion by the opening of navigation in 1887. Business is tending more and more to the Northwest, especially by the water route via Buffalo and the lakes.

Lake freights closed last week quiet and weak, with complaints of lack of coal for shipment. Since the market steadied, and all charters were made at full rates, the scarcity of fuel continues. To-day closed dull and unchanged, with little or no tonnage offering for Lake Superior points.

The coal shipments by lake Westward, from September 30th to October 6th, both days inclusive, were 46,812 net tons; namely, 11,530 to Chicago, 15,400 to Milwaukee, 1100 to Detroit, 5100 to Duluth, 5200 to Superior City, 400 to Green Bay, 600 to Racine, 1037 to Port Arthur, 300 to Toledo, 470 to Port Huron, 725 to Escanaba, 970 to Marquette, 100 to Bay City, 1700 to Saginaw, 280 to Walkerville, 1900 to Fort William; making a total for the season of 1,165,981 net tons (including vessels cleared from Tonawanda, but destination not stated). The engagements and rates reported were as follows: $1 to Chicago, Milwaukee, Racine, Green Bay, and Marquette; 90c. to Port Arthur, Fort William, and Superior City; 80c. to Escanaba; 60c. to Duluth; 50c. to Saginaw and Bay City; 45c. to Port Huron; 20c. to Detroit, Toledo, and Walkerville.

The coal charters by canal reported during the past week were as follows: 6 loads to Syracuse, 95c. gross, free on and off; 2 loads to Lockport, 40c. net, free on and off. The nominal rate to New York, $2; and to Albany, $1.45 net, captain to pay loading and unloading.

The receipts of coal by canal for the first week of October at this port were 813, and the shipments for the same period 1090 net tons.

The receipts of coal by lake thus far this year are only 520 net tons. The shipments to Western and Lake Erie ports for the month of September, 227,800 net tons, as compared with 197,420 tons in 1885, and 199,920 tons in 1884; for the season to October 1st, 1,128,870 tons, as compared with 1,069,880 tons in 1885 and 1,089,990 tons in 1884. The distribution to principal ports this year was as follows: 454,000 tons to Chicago, 251,000 tons to Milwaukee, 38,000 tons to Toledo, 115,000 tons to

Duluth, 21,000 tons to Racine, 22,000 tons to Green Bay, 16,500 tons to Detroit, 10,000 tons to Sheboygan, 45,000 tons to Superior City, 7000 tons to Sandusky, 6000 tons to Kenosha, 10,000 tons to Marquette, 10,000 tons to Washburn, 4000 tons to Windsor, 2250 tons to Port Arthur, 4000 tons to Saginaw, 3000 tons to Hancock, and 2000 tons to Menominee.

The receipts of coal at this port by canal for the month of September were 15,242 net tons; thus far this season, 61,487 tons, as compared with 111,852 tons in 1885, and 115,020 tons in 1884. The shipments for the month of September, 2653 tons; thus far this season 13,768 tons, as compared with 21,697 tons in 1885, and 24,878 tons in 1884.

No statistics to hand of railroad receipts and shipments.

Boston. Oct. 6.

[From our Special Correspondent.]

October has come, and with it the promised advance. If the coal companies had kept their word as faithfully early in the season, how much better the business of 1886 would have been! As the companies come to time with their advances, confidence in the situation is rapidly growing. Trade has fallen off in Boston since the last advance, but this is only the customary halt for the situation to fully show itself. Quite a large amount of coal was bought in this market before the advance took place. Now that Stove coal is advanced 15 cents, Broken 5 cents, and Egg and Chestnut 10 cents a ton, dealers feel they can afford to wait a while for the individual operator to come into the market again. Just at present, there is scarcely any individual coal offered in this market. It is all sold up, say at a range of $3.90@$4 for Stove, f.o.b. at New York. In a few days, they will have more to offer, and will, as usual, cut the company prices slightly. Unless the companies are in better position than they seem to be, no large amount of coal will be sold at the last advance, particularly stove coal. Boston dealers are inclined to act upon this view, whether they expect to see it realized or not.

There is really nothing done in soft coal, which remains nominally at $2.10@$2.15 f.o.b.

There is a little firmer tone to freights and less disposition shown to cut minimum.

We quote rates exclusive of discharging:

New York, 80@90c.; Philadelphia, $1@$1.05; Baltimore, $1.10@$1.15; Newport News and Norfolk, $1.05@$1.10; Richmond, $1.10@$1.15; Cape Breton, $1.85@$2; Bay of Fundy, $1.60.

There is a better feeling among retailers. Trade has increased in volume and there is a disposition to get fair prices.

We quote delivered prices:

White ash, furnace and egg	$5.00@$5.25
" stove and nut	5.25@ 5.50
Lehigh furnace, egg and stove	5.50@ 5.75
" nut	5.50@ 6.00
Shamokin egg	5.50@ 6.00
" stove	5.75@ 6.00
Lorberry egg and stove	@ 6.50
Franklin egg and stove	@ 7 00

Pittsburg. Oct. 7.

[From our Special Correspondent.]

The coal market remains in a very unsatisfactory condition. Prices rule low. The entire shipment by river for September was 25,000 bushels in flats for Cincinnati, and 40,000 bushels for Parkersburg. The Monongahela miners are again talking strike. We have the word of several coal operators who state that to pay an advance is out of the question. If it is insisted on, they will close their mines and remain closed. H. Florsham is shipping coal to Dakota on a contract just made. The freight per car at destination is $135. The Monongahela pools contains between 9,000,000 and 10,000,000 bushels loaded ready for first water.

Present rates: River, wholesale, f.o.b., 3½@4½c.; Railroad, 4¼@4¾c.

Connellsville coke is firm. Good business is doing. Prices are maintained; stocks are small. Blast-Furnace, $1.50 f.o.b. cars at ovens; Foundry, $1.75; Crushed, $2.25.

FINANCIAL.

Mining Stocks.

New York, Friday Evening, Oct. 8.

The feature of the mining market this week is its increased activity, although nothing of interest has occurred. Most of the dealings have been in the better class of stocks, and the prices of these have been held firm.

A small interest has been shown in Horn-Silver, and it has sold at steady prices, ranging from $2.10@$2.

The *Evening Post* of October 8th says:

For several weeks, very ugly rumors have been in circulation about Horn-Silver. It is known that about a month ago a director and large stockholder became alarmed and sold his 27,000 shares to the president and vice-president of the company, taking their note of hand for the same for about $40,000. It is alleged that he compelled the two officials to buy his stock, in order to avoid trouble. It is also alleged that the said director found that, instead of having nearly $600,000 in its treasury, as is commonly understood, the company has practically no available funds, its so-called assets being merely "cats and dogs." It is also alleged that the Horn-Silver mine itself is worked out, and that the present product does not pay for working, and that the company's furnaces have been stripped of every thing that could be made available for a little money. There are 400,000 shares of the Horn-Silver stock held in scattered lots from London to Utah, and it is time that some stockholder investigated the company's books and assets to see whether there is good foundation for these rumors.

The Bodie stocks have been quiet, but rule at about steady prices. Bodie sold from $2.75@$2.60, with sales of 1200 shares. Bulwer was steady at $2@$1.95, with sales of 1700 shares. Mono sold to the extent of 1400 shares at from $2.65@$2.20. The Colorado stocks were fairly dealt in, and sold at steady prices. Leadville was dealt in to the extent of 2600 shares, selling at from 37@40c. Little Chief sold at from 25@24c., with a moderate business. Little Pittsburg ruled at 45c. Lacrosse was largely dealt in at from 8@7c.

Homestake was moderately dealt in at steady prices, selling at from $20@$19.50. Deadwood sold at $2.50 under a small business.

Plymouth Consolidated sold at firm prices, with small transactions, ranging from $16.13@$16.25.

North Belle Isle experienced a sharp advance in prices. It sold at from $2.10@$3, and was fairly dealt in. Navajo was strong, selling at from 68@88c., with sale of 2700 shares. The Comstocks were in good demand, but were a little weak. Consolidated California & Virginia sold at from $2.35@$2, and was dealt in to the extent of 6716 shares. Hale & Norcross was moderately dealt in, and declined from $1@85c. Sierra Nevada sold from 60c.@68c., with a moderate business. Sutro Tunnel was quite active, selling at from 8c.@6c., with transactions of 19,000 shares.

Rappahannock was rather quiet, and sold at 9c.

The total transactions were 74,826 shares, showing an increase of 7971 shares, as compared with the preceding week.

Coal Stocks.

The stock market on specialties has been exceedingly mild during the past week. Upon the whole, it has been ragged. Prominent commission houses and a number of leading operators are expressing some alarm at the manner in which stocks have recently moved up. The coal stocks have been irregular, but upon the whole quite strong. The dealings in Lackawanna have aggregated 105,980 shares at $135½@$138⅞, closing at $137¼. Delaware & Hudson has ranged between $103, and closed at $105¾, with sales of 16,320 shares. Reading has been dealt in to the extent of 472,032 shares, at $33¼@$38¼, closing at $36⅞. The talk on this stock is very bullish. Jersey Central, with sales of 68,548 shares at $60¼@$63¾, closed at $62¾. The transactions in the bituminous coal stocks are increasing. The dealings in New Central aggregate 1200 shares at $13¾@$15, closing at the latter figure. The dealings in Maryland amount to 1950 shares, at $14@$16¼, closing at this figure. There are indications that the latter stock will have a large advance.

A formal decree has been entered in the United States Circuit Court in Philadelphia, providing for the foreclosure of the Philadelphia & Reading Company. The masters are to make up the accounts and report what the expenses are that must be paid. After their report, a subsequent order will be made fixing the time of sale. Reorganization under foreclosure seems inevitable, because the interests of the creditors are so conflicting that a general assent to any plan will be impossible to secure. The reorganization committee was expected to complete its new plan, but no announcement has yet been made of its action.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned:

Chrysolite Silver Mining Company, No. 13 Burling Slip, New York City, November 3d, at twelve o'clock M.

Consolidated Electric Light Company, No. 32 Nassau street, New York City, October 16th, at twelve o'clock M.

Manhattan Railroad Company, No. 71 Broadway, New York City, November 10th, at twelve o'clock M.

May Flower Gravel Mining Company, No. 328 Montgomery street, San Francisco, Cal., October 18th, at one o'clock P.M.

Jupiter Deep Blue Gravel Hydraulic Mining Company, No. 13 Nevada Block, San Francisco, Cal., October 6th, at twelve o'clock M.

ASSESSMENTS.

Company.	No.	When levied.	Delinquent in office.	Day of sale.	Amount.
Andes, Nev	30	Sept. 15	Oct. 21	Nov. 10	.25
Baker Divide, Cal.	12	Sept. 24	Oct. 25	.....	.25
Bed Rock, Ariz	2	Sept. 13	Oct. 18	Nov. 8	.10
Bullion, Nev	31	Aug. 31	Oct. 5	Oct. 26	.30
Chollar, Nev	21	Aug. 24	Sept. 29	Oct. 20	.30
Cons. Imperial, Nev.	23	Aug. 5	Sept. 8	Sept. 28	.10
Eureka, Dak	6	Sept 27	Nov. 13	.....	.02½
Golden Fleece, Cal.	6	Sept. 18	Oct. 23	.....	15.00
Golden Jacket, Nev.	2	Sept. 1	Oct. 14	Nov. 4	.10
Gold Point Con., Cal.	11	Aug. 3	Oct. 2	Oct. 23	.01
Gould & Curry, Nev.	54	Sept. 28	Nov. 3	Nov. 24	.50
Homeward Bo'd, Dak	2	Aug. 6	Oct. 4	Oct. 25	1/8
Iron Mountain, Dak.	1	May 31	*Sep 30	Oct. 18	¼
Keokuk, Dak	2	Aug. 12	Sept. 15	Oct. 15	¼
Lower Level, Dak	1	July 13	Oct. 19	.....	.02½
Mayflower Gravel, Cal	32	Sept. 6	Oct. 15	Nov. 12	.25
Minna, Dak	2	Sept. 7	Oct. 8	Oct. 25	¼
Mount Corey, Nev.	1	Aug. 25	Oct. 2	Oct. 23	1.00
New Basil Cons., Cal.	10	Aug. 18	Sept. 20	Oct. 18	.05
Nevada, Nev	1	Aug. 25	Oct. 2	Oct. 23	1.00
New Discovery, Dak.	.....	Sept. 21	Oct. 22	.....	¼
Pocahontas, Dak	2	Sept. 27	Oct. 27	.....	.01
Potosi, Nev	25	Aug. 31	Oct. 5	Oct. 26	.30
Ross-Hannibal, Dak.	1	Sept. 4	Oct. 9	Oct. 26	.01
Ruby, Dak	1	Aug. 10	Sept. 15	Oct. 15	.01
Seabury-Calkins, Dak	4	Sept. 7	Oct. 12	Oct. 30	.02
Sierra Nevada, Nev.	86	Sept. 11	Oct. 13	Nov. 1	.25
Silver Lining, Nev.	2	Sept. 14	Oct. 18	Nov. 5	.10
Silver Reef, Dak	1	Aug. 23	Sept. 23	Oct. 9	1/8
Silver Star, Dak	1	July 8	*Oct. 11	*Oct. 27	¼
Union, Utah	.....	Aug 28	Oct. 25	Nov. 11	1/8
Utah, Nev	53	Aug. 24	Sept. 28	Oct. 18	.50
West Galena, Dak	5	Oct. 30	Nov. 20	.....	1/8

* The delinquent day and the day of sale were postponed to dates given above.

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, No. 49 Broadway, report for the week as follows:

The oil market sold up to 65⅞ on Wednesday on the strength of reported decline in production and free Pittsburg buying. The Washington District does not appear to be capable of much increase. Shoustown is the center of interest at present, and is producing about 5000 barrels daily, but the best judges think that it is a small and shallow pool and not permanently dangerous. We believe that the present low price of oil has discounted the developments in Washington and Shoustown, and that the bull side is by far the safer one to follow from now on, unless some unexpected find is made in the wilderness.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

		Opening.	Highest.	Lowest.	Closing.	Sales.
Oct.	2	62⅛c.	63¼c.	62⅛c.	62⅞c.	1,053,000
	4	63⅛	64⅛	63⅛	64⅜	1,808,000
	5	64⅜	65⅛	63⅛	63⅛	3.764.000
	6	63¾	65⅝	63¾	65⅝	4,735.000
	7	65¾	65¾	64⅛	64⅝	3,593,000
	8	64⅞	65⅛	64¼	64¾	2,201,000
Total sales						17,154,000

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

Boston, Oct. 7.

The reduced volume of business noted last week continues, although there are indications of returning activity at an early date and consequent higher prices. The outlook for Lake Superior stocks is excellent, and it seems almost certain that they must sell higher on merit. The little demand for low-priced copper stocks, which seemed to be gathering strength two weeks ago, has subsided in a measure, in sympathy with the condition of the market for higher-priced stocks. They will, however, come to the front again, as sure as the dividend stocks begin to advance. Few, if any, of these low-priced mines are doing active work, but there is always confidence that even a mod-

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Oct. 2.		Oct. 4.		Oct. 5.		Oct. 6.		Oct. 7.		Oct. 8.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon													
Amie Con., Co													
Argenta													
Bassick, Co													
Belle Isle, Ne	.28		.28		.30				.32		.38	.35	4,400
Bodie Cons., Ca	2.75	2.60			2.65		2.65		2.60				1,200
Breece													
Bulwer, Ca	1.85				2.00		1.95						1,700
Caledonia							1.60	1.50					400
Carbonate Hill													
Chrysolite, Co	.56	.54	.55										1,300
Colorado Central													
Cons. Cal. & Va., Ne	2.30	2.25	2.35		2.30	2.25	2.25		2.10	2.00	2.25	2.00	6,716
Crown Point													
Deadwood							2.50		2.50				500
Eureka Cons., Ne			3.80										160
Father de Smet, Dk													
Freeland													
Gold Stripe, Ca													
Gould & Curry, Ne													
Grand Prize, Ne													
Green Mountain, Ca													
Hale & Norcross, Ne	1.00		.95				.95		.85		.85		1,700
Helena													
Homestake, Dk			20.00		19.75	19.50							370
Horn-Silver, Ut	2.00				2.10		2.00		2.00		2.00		1,430
Iron Hill													
Iron Silver, Co													
Leadville C., Co					.38	.37	.39		.39	.38	.40		2,600
Little Chief, Co	.25	.24	.24										2,400
Little Pittsburg, Co					.45								200
Martin White, Ne													
Moulton													
Navajo, Ne			.68		.68				.73		.88		2,700
North Belle Isle, Ne	2.20	2.00	2.10		2.60	2.40			2.80	2.40	3.00	2.90	2,750
Ontario, Ut							25.50	25.00					700
Ophir													
Osceola													
Plymouth	16.13				16.13		16.25						300
Quicksilver Pref., Ca	24.50						24.38	24.13			24.50		500
" Com., Ca					6.50		6.50						200
Quincy													
Robinson Cons., Co	.43	.41	.45						.40				1,300
Savage, Ne			1.90						1.85				400
Sierra Nevada, Ne	.30				.60		.65	.62			.68		2,500
Silver King, Ar					4.50								200
Spring Valley, Ca													
Standard, Ca													
Stormont, Ut	.13				.13								1,100
Tip Top, Ar													
Yellow Jacket	1.00												200

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Oct. 2.		Oct. 4.		Oct. 5.		Oct. 6.		Oct. 7.		Oct. 8.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Albion													
Alta													
American Flag													
Barcelona, c													
Bechtel Con., c													
Belvidere													
Belcher													
Best & B'licher, c. s	.65	.60									.70	.80	1,000
Big Pittsburg, s. L													
Bowman Silver													
Bull-Domingo, s.L													
Castle Creek													
Central Ariz'na, s													
Cons. Imperial													
Con. Pacific													
Cusi													
Decatur													
Durango, c													
Eastern Oregon													
Goodshaw, c													
Harlem M.& M.Co													
Harshaw													
Kossuth													
Lacrosse, c	.08				.07						.07		6,000
Mariposa Pref., c													
" Com., c													
Mexican, c. s			.40										1,100
Mono	2.65		2.50								2.55		1,400
New Pittsburg													
North Standard, c													
N. Horn-Silv'r, s L													
Ori'nt'l & Miller, s													
Plutus													
Potosi													
Rappahannock, c			.09		.09				.09		.09		5,300
Red Elephant, s													
Ridge													
Silver Cliff, s													
Sonora Con													
South Bodie, c													
South Bulwer, c													
South Hite													
South Pacific													
State Line, 1 & 4, s													
" Nos. 2 & 3, s													
Sutro Tunnel					.08						.07	.06	19,000
Taylor Plumas													
Tioga													
Unadilla, s													
Union Cons., c. s	.30		.27		.30		.35	.33					3,100
Utah													

Dividend shares sold, 37,926. Non-dividend shares sold, 36,900.

San Francisco Mining Stock Quotations.

Daily Range of Prices for the Week.

Name of Company.	Closing Quotations.					
	Oct. 1.	Oct. 2.	Oct. 4.	Oct. 5.	Oct. 6.	Oct. 7.
Albion						
Alpha						
Alta	.90		.70	.80	.80	.70
Argenta						
Bechtel						
Belcher						
Belle Isle						
Best & Belcher	.70		.75	.75	.65	.65
Bodie	2.62½		2.50	2.50	2.50	2.37½
Bullion						
Bulwer	1.87½		2.00	1.87½	1.87½	1.75
Chollar	.90		.90	.80	.75	.70
Con. Pacific						
Con. Cal. & Va	2.37½		2.37½	2.37½	2.25	2.12½
Crown Point	1.00			.95		
Day						
Elko Cons						
Eureka Cons	4.00		3.87½	3.75	4.00	4.00
Exchequer						
Gould & Curry	.55		.60	.65	.55	.55
Grand Prize						
Hale & Norcross	.90		.80	.80	.70	.65
Independence						
Martin White						
Mexican	.35		.35	.35	.35	.40
Mono	2.50			2.37½	2.25	
Mount Diablo						2.75
Navajo			.75	.75	.75	.80
Northern Belle						
North Belle Isle						
Ophir	.85		.90	.85	.75	.75
Overman						
Potosi	.55		.50	.45	.40	.40
Savage	2.00		2.12½	2.25	2.00	2.12½
Scorpion						
Sierra Nevada	.30		.30	.30	.30	.25
Silver King						
Tip-Top						
Union Cons	.25		.30	.25		.25
Utah	.70		.65		.65	.70
Wales Cons						
Yellow Jacket			.85	.80	.75	.80

erate "boom" in other stocks will give the "little fellows" a chance for life. Calumet & Hecla shows slight improvement, selling up two points to $227; but it lacks that vigor of movement that heretofore made it leader of the market. The policy of the managers of abandoning the regular quarterly payments, and making their dividends "hap-hazard," has greatly injured the stability of the company as a regular dividend-payer: it is supposed that one will be forthcoming soon, but not even a shrewd guess can be made as to just when.

BOSTON MINING STOCK QUOTATIONS.

	Oct. 1.		Oct. 2.		Oct. 4.		Oct. 5.		Oct. 6.		Oct. 7.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Amie													
Allouez	2.50		2.37½				2.37½		2.50				1,000
Atlantic			11.										20
Arnold			.45		.45		.45				.45		500
Aztec							.15				.12½		400
Belle Isle													
Blue Ridge													
Bodie													
Bonanza D	1.				1.	.90	1.		.95		.95		900
Boston & Montana	4.50								4.				200
Bowman Silver			.08		.08		.08		.07				1,600
Bijou Cons			.02										1,000
Breece	.25		.25		.25		.25						1,100
Bulwer													
Calumet & Hecla	225.						226.				227		23
Catalpa			.27½										200
Cedar Spring													
Central													
Con. Pacific													
Con. Virginia													
Copper Falls													
Crescent			.10		.10				.09		.09		900
"Cusi"							37½		.37½		.37½		400
Dunkin	.29				.27½		.28						1,000
Empire													
Eureka													
Franklin	13⅜		13.75	13.25	13.50		13.75		13.75	13.50	13.75		6 80
Freeland			1.75										40
Grand Prize													
Hanover													
Humboldt	.15								.15				300
Huron	2.25		2 37½		2.37½				2.50		2.50	2.37½	650
Mascot													
Mesnard							.40						100
Napa	1.												100
Ontario													
Osceola									16 75		16⅝		25
Pewabic									2.				210
Quincy	55.		55.		55.				55.		55.		388
Ridge													
Robinson													
Security													
South Side													
Standard													
Star													
Sutro Tunnel													
Stormont	11				.11								200
Tamarack	.92½												7
Winthrop							.10				.10		200

And after that shall be paid, the time of the next one will be equally in doubt. The sales are very small, however, and most holders are willing to "bide their time," in full confidence that the value is in the property, let it come out when it may. Allouez has been moderately active at $2⅝@$2¼, but the stock is still offered at the latter figure. Atlantic sold at $11 for a small lot, and not much stock could be either bought or sold at that figure. Franklin has held rather steady, playing between $13¼ and $13⅜, closing $13¼ bid. As this stock is sure to pay $1 a share in January next, there is no pro-

COAL STOCKS.

Name of Company.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share. Oct. 2. H.	Oct. 2. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Sales.
Barclay Coal														
Cameron Coal	50	18⅞		19	18⅞	18⅞		18½		18¾				741
Col., C. & I	10	28⅝	28¼	29¼	28¼	29	28¼	28⅝	28⅛	28⅝		28¼		3,640
Ches. & O. RR	100	9						10⅛		10		10		450
Consol. Coal	100					25								100
Cumb. C. & I	100													
Del. & H. C	100	106⅝	105½	105⅛	103	105¾	104¾	105	104¼	105⅛	104	105	104⅛	16,320
D., L. & W. RR	50	138	136⅛	137	135½	138⅞	137	138½	137¼	138	137⅛	137⅞	137	105,980
Elk Lick Coal Co														
Lehigh C. & N.†	50			52	51½	52½	52	52½	52¼	52¼	52			1,907
Lehigh Valley RR.†	50			57		57		57½	57¼	57⅛	57⅜			704
L. & W. C. & I. Co														
Maryland Coal	100					14		15½	14¾	16¼	15	16¼	16	1,950
Montauk Coal	100													
Morris & Essex	50	140½								140¼				320
New Central Coal	100	13¾				14¾		14		14¾		15		1,200
N. J. C. RR	100	62⅛	61¼	61⅝	60¼	63¼	61⅛	63¾	62¼	63	62⅛	63¼	62	68,548
N. Y. & S. Coal	50													
Penn. Coal	50													
Penn. RR.†	50			58⅞	58⅛	59⅛	59	60	59¼	59⅞	59⅛			13,129
Ph. & R. RR.*	50	35⅞	34⅝	34⅞	33¼	36¾	35⅛	36⅞	35¾	38¼	36¾	38	36⅜	522,241
Spring Mountain	50													
Westmoreland Coal†	50													

* Of the sales of this stock, 50,200 were in Philadelphia, and 472,032 in New York.
† The quotations for these stocks are not percentage, but actual price. Total sales, 737,230.

FREIGHTS.

The latest actual charters to October 8th, per ton of 2240 pounds:

To	From Philadelphia	From Baltimore.	From New York shipping ports.
Alexandria	.60@.70		
Annapolis	.65		
Baltimore	.60§		
Bangor	1.05*	1.15	1.10
Bath, Me	1.05*	1.15	.85*
Beverly	1.05*		.85*
Boston, Mass	1.05*	1.15	.85*
Bridgeport, Conn.		1.00	.65
Brooklyn		1.00	.18§
Cambridge, Mass.	1.05*		.85*
Cambridgeport	1.05*		.85*
Charleston, S. C.	.85	.80@.85	
Charlestown	1.05*		.85*
Chelsea	1.05*		.85*
Com. Pt., Mass.	1.05*		.85*
E. Boston	1.05*		.85*
East Cambridge	1.05*		.85*
E. Gr'nwich, R. I.			.80
Fall River	.90*	1.00	.75@.80
Galveston	2.35	2.75@3.00	
Gardner	1.05*¶	1.15	
Georgetown, D. C.	.60@.70		
Gloucester	1.05*		
Hoboken	.95		
Jersey City			
Lynn	1.05@1.10*		1.35
Marblehead	1.05*		
Milton		1.30	
Newark		1.15***	
New Bedford	.90*	1.00	.80
New-Berne	.75		
Newburyport	1.20*	1.30	1.00*
New Haven		1.00	.65
New London		1.00	.70@.75
New Orleans	2.00		
New York		1.00	.25§
Newark, N. J		1.15	
Newport	.90*		.75@.80
Norfolk, Va	.50@.55		
Norwich		1.15*¶	.75@.80
Pawtucket			.75@.80
Portland, Me	1.05*	1.15	.85*
Portsmouth, N. H.	1.15*	1.25	.95*
Portsmouth, Va.	.50@.55		
Providence, R. I.	.90*	1.00	.80
Quincyport			1.10
Richmond, Va.	.60@.65		
Rockport	1.25*		
Roxbury, Mass.	1.05†		
Saco	1.10*¶		
Salem, Mass.	1.05@1.15*	1.15	.85*
Savannah	.90@1.00	1.05	
Somerset		1.00	.75
Washington	.65		
Williamsb'g, N. Y.		1.00	
Wilmington, Del		1.00	
Wilmington, N. C.	.90	1.00	

* And discharging. † And discharging and towing. 3c. per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. †† Pilotage. ** Below bridge. *** Old B. L.

bability of a serious decline; while on the other hand, with a little better price for ingot copper, the shares may sell up to $20. Huron sells at $2½, and only a moderate demand. Osceola is very quiet at $16⅝ and $16¾, with small dealings. Pewabic is more inquired for, and has sold this week at an advance to $2. It would not be strange if this stock should, after all, take its place again among valuable ones in the market. Quincy has sold steadily through the week at $55, which price still bid. Tamarack advanced from $88 to $92, and some day this stock is going above $100 to stay there.

Silver stocks command very little attention, and prices are merely nominal, with limited sales. Boston & Montana holds at $4½ bid, with no transactions recorded. Catalpa is dull again, and offered down to 25c. This stock is principally dealt in at the Mining Exchange, and sales at the Brokers' Board are rare, possibly because of the fact that the commission at the Mining Exchange is only 50 cents per 100 shares, while at the old Board a charge of $3.12½ is made for the same service. This difference of charges at the two exchanges holds good on all stocks selling under 50 cents per share, and even up to $1 a share the price is only $1 per hundred shares at the Mining Exchange. Bowman is pretty nearly "dead," at 7c., awaiting the sale of forfeited assessment stock October 12th. Breece, which at one time was strong at 26c., is not above 20c. bid now. Dunkin, nominal at 29c., and it would be difficult to buy or sell large lots at this figure. "Cusi" has weakened off to 37½c., and 35c. is now bid. The week has been so dull that it would not be surprising if a moderate "turn" in prices was near at hand.

St. Louis Mining Stocks. Oct. 6.

The market continues firm, although not quite so active as last week. This comparative dullness can be ascribed more to the festivities of the week, the annual fair, vailed prophets' processions, etc., which occupied the attention of the people, than to a lack of confidence or indisposition to purchase. We look for increased transactions the coming week. The greatest advances were made in Granite, which is $38.50 bid, with none offered below $39.50; Sheridan, with $4.50 bid; and Yavapai, $1.40 bid. Other stocks have been quiet, although the speculative demand seems to widen somewhat, and, as seen by our quotations, some stocks that had no market before find purchasers at near asking prices.

Name of Company.	Location.	Bid.	Asked.
Adams, S. L	Colo	$4.75	$5.00
Cen. Continental, G. S.	Ark		1.00
Consolidated Silver, S.	Mo		
Courtland	Colo	.40	.50
Dandy, S.	Colo		
Durango, T.	Mex		
Grand Duke	Colo		
Granite Mountain, S.	Mont	38.50	39.50
Hope, S	Mont	40.00	45.00
Ideal, S. L	Colo	.90	1.00
Laclede		.90	1.10
Peacock	N. M.	3.50	4.00
Puritan			1.00
Quincy	Colo	.20	.30
Sheridan	N. M.	4.50	5.00
Small Hopes Cons., S. L.	Colo	7.50	8.00
St. Louis & Mexico	Mex		
St. Louis & San Fran.	Mex		
St. Louis & Sonora, G. S.	Mex		.30
St. Louis & St. Elmo	Colo		1.00
St. Louis & Yavapai	Ariz	1.40	1.55

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CONTRACTS OPEN.

64 OIL WELL DRILLERS—PROPOSALS will be received by "Editor," care of Engineering and Mining Journal, New York City, for boring for oil in France. Maximum depth 600 meters, through calcareous and bituminous shales. State price per meter, contractor finding all plant except engines.

92 ENGINES—PROPOSALS WILL BE received by Messrs. Kingsley Brothers, Hamilton, Loudon County, Va., for one large engine, 15 horse-power, engine and boiler, 20 horse-power automatic, also two or three engines, say 3 or 4 horse-power, and boilers from 4 to 6 horse-power.

94 RUBBLE STONE—PROPOSALS WILL be received by Major G. L. Gillespie, U. S. Engineers, Post-Office Building, Boston, Mass., until October 12th, for 18,000 tons of rubble stone, delivered in Newburyport, Mass.

98 PUMPING ENGINES—PROPOSALS will be received at the office of the Water-Works, Cleveland, Ohio, until October 16th, for erecting two pumping engines, each capable of pumping fifteen million United States standard gallons of water in twenty-four hours, against a maximum pressure of 100 pounds per square inch on the pumps.

100 STEEL GUN-FORGINGS AND ARMOR—Proposals will be received by the Secretary of the Navy, Navy Department, Washington, D. C., until December 10th, for about 1310 tons of steel gun-forgings, and about 4500 tons of steel armor plates.

101 MACHINERY FOR CRUISERS AND gunboats—Proposals will be received by the Secretary of the Navy, Navy Department, Washington, D. C., until November 24th, for the construction and erection on board the vessels of engines, boilers, and appurtenances, complete in all respects.

104 STEAM-HEATING APPARATUS—PROposals will be received at the office of Supervising Architect, Treasury Department, Washington, D. C., until October 20th, for supplying and putting in place complete in the Custom-House, etc., at Toledo, Ohio, a low-temperature return-circulation steam-heating apparatus

105 RUBBLE STONE—PROPOSALS WILL be received by Major M. B. Adams, U. S. Engineers, Burlington, Vt., until October 15th, for 16,665 cubic yards of rubble stone and 5500 cubic yards of large stone for Rouse's Point, N. Y.

106 SUPPLIES—PROPOSALS WILL BE REceived by T. G. Baylor, Colonel of Ordnance, Commanding, Rock Island Arsenal, Rock Island, Ill., until October 16th, for furnishing supplies during the fiscal year ended June 30th. Silver, gold, steel, tin, brass, iron, copper, etc.

107 WATER-WORKS—PROPOSALS WILL be received by W. Kunz, City Clerk, until October 15th, for the construction and maintenance of a system of water-works in the city of Sheboygan, Wis. There will be required 12 miles of pipe with 150 hydrants.

108 IRON-WORK—PROPOSALS WILL BE received at the office of Supervising Architect, Treasury Department, Washington, D. C., until October 13th, for furnishing and fixing in place the iron columns, girders, and beams required for the Post-Office, etc., building at St. Joseph, Mo.

109 REMOVING OBSTRUCTIONS — PROposals will be received by Lt.-Col. Walter McFarland, U. S. Engineers, Army Building, Houston and Green streets, New York, until October 13th, for removing about 15,000 tons of broken rock from Middle Reef, or Flood Rock, Hell Gate. Proposals must be made in triplicate.

110 LIGHTING APPARATUS—PROPOSALS will be received by Capt. George H. Cook, Depot Quartermaster's office, David's Island, N. Y. H., until October 25th, for furnishing and putting up a complete apparatus for lighting the new Mess-Hall at David's Island, with the Gilbert & Barker Manufacturing Co.'s system. Envelopes containing proposals to be marked "Proposals for Apparatus for Lighting Mess-Hall."

111 DREDGING—PROPOSALS IN TRIPLIcate will be received by William F. Smith, U. S. Agent, U. S. Engineer's Office, Wilmington, Del., until Oct. 19th, for dredging in Corsica Creek, Md.

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